DOCUMENT RESUME

ED 321 450 EC 231 570

AUTHOR	VanBiervliet, Alan; Parette, Howard P., Jr.
TITLE	Arkansas Technology Information System.
INSTITUTION	Arkansas Univ., Little Rock. Center for Research on Teaching and Learning.
SPONS AGENCY	Arkansas State Div. of Rehabilitation Services, Little Rock.
PUB DATE	5 Jan 90
NOTE	91p.
PUB TYPE	Reports - Descriptive (141)
EDRS PRICE	MF01/PC04 Plus Postage.
DESCRIPTORS	Agency Cooperation; Appropriate Technology; *Assistive Devices (for Disabled); Communication Aids (for Disabled); Community Development; *Community Involvement; *Databases; *Disabilities; *Educational Objectives; Elementary Secondary Education; Information Services; Linking Agents; Organizational Objectives; Scientific and Technical Information; *State Programs; Statewide Planning; *Technical Assistance; Technology Transfer
IDENTIFIERS	*Arkansas; Technology Related Assistance Indiv Disabil Act

ABSTRACT

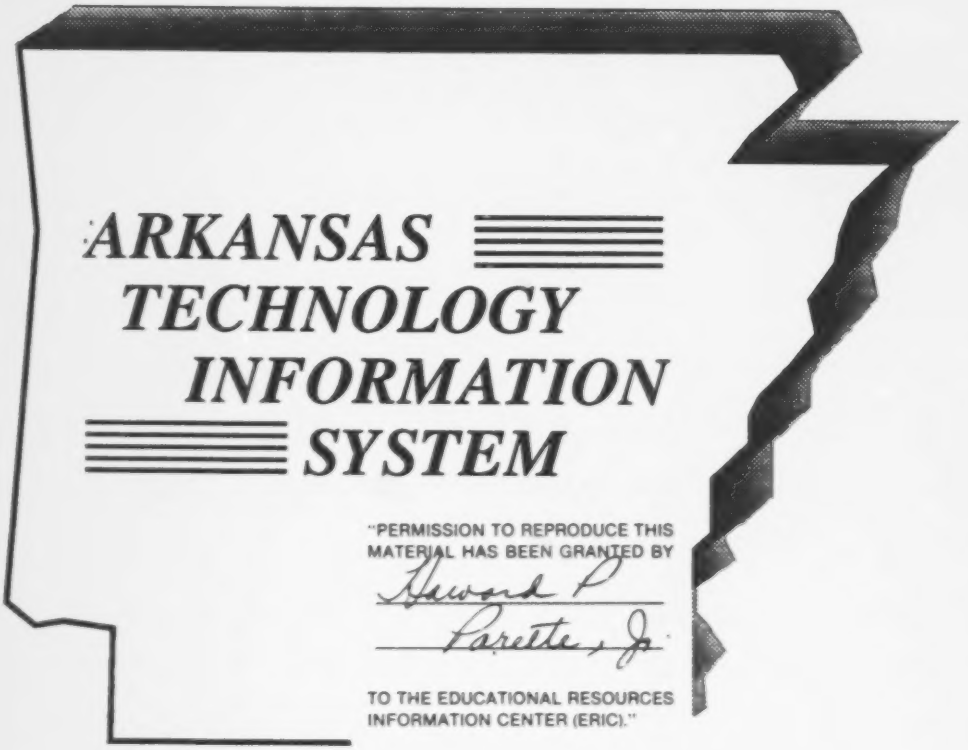
The Arkansas Technology Information System (ARTIS) was developed to fill a significant void in existing systems of technical support to Arkansans with disabilities by creating and maintaining a consumer-responsive statewide system of data storage and retrieval regarding assistive technology and services. ARTIS goals also include establishment of a marketing and public awareness campaign promoting benefits and use of technology for disabled persons, development of coordinated training activities for consumers, their families, professionals, employers, and the public, creation of a statewide netwprk for exchange of used assistive equipment, development of interagency linkages, establishment of a network of community-based technology specialists, and development of a user-to-user consumer network. (PB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED321450

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Think People...
Think Technology.



ARKANSAS TECHNOLOGY INFORMATION SYSTEM

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Howard P Parette, Jr.

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Submitted by;
Alan VanBiervliet, Ph.D.
Howard P. Parette, Jr., Ed.D.
Center for Research on Teaching and Learning
University of Arkansas at Little Rock
2801 S. University
Little Rock, AR 72204
569-3423

Submitted to:
Division of Rehabilitation Services
Donaghey Plaza North - 3rd Floor
Seventh and Main Streets
Little Rock, AR 72201

January 5, 1990

EC 231570

BEST COPY AVAILABLE

ARKANSAS
TECHNOLOGY INFORMATION SYSTEM

Abstract

The importance of technology in our society is readily recognized by virtually all persons. No one can potentially benefit more from technology than persons with disabilities. Reflecting a comprehensive approach to securing, storing, and disseminating information relating to technology and related services to *all* Arkansans, the Arkansas Technology Information System (ARTIS) was conceptualized to fill a significant void in the existing service delivery system. The purpose of ARTIS is to create and maintain a consumer-responsive, statewide system of information generation, storage, and retrieval enabling all Arkansans to access information regarding assistive technologies and services. The goals for this system are to: 1) develop an on-going consumer-driven technology planning and evaluation system; 2) develop a statewide technology information/service system; 3) establish a marketing and public awareness campaign to promote the benefits and use of technology for persons with disabilities; 4) develop coordinated training activities for consumers, their families, professionals, employers and the general public concerning technology-related services; 5) create a statewide system for equipment exchange of used assistive devices; 6) improve interagency cooperation in the development of consumer-responsive policies and procedures regarding technology services; 7) establish a network of community-based technology specialists for consumers and their families; and 8) develop, implement, and evaluate a User-to-User network involving consumers providing information and support to one another. The information system will be based on an efficient, distributed database with a barrier free user interface that can output information in print, large print, Braille, and auditorily. Information concerning services, regulations, used equipment, User-to-User Network, vendors, and assistive devices will be electronically stored in innovative linked databases available to any individual or group in Arkansas. Funded under P.L. 100-407, the *Technology-Related Assistance for Individuals with Disabilities Act of 1988,* ARTIS is a subcomponent of a larger system, the Arkansas Technology Access Program (ARTAP). The ARTAP planning process was exemplary in both conception and implementation, characterized by strong commitments from both professionals and consumers alike who shared a common goal of breaking down barriers experienced by persons with disabilities and their families who have a need for technology and related services.

Table of Contents

Plan of Activities 1
Goal 1. To develop an information service system..... 1
Objective 1.1
Arkansas Database Development 2
Objective 1.2..... 7
Objective 1.3..... 7
Goal 2. To establish a marketing and public awareness campaign 8
Objective 2.1
Objective 2.2..... 9
Objective 2.3
Goal 3. To develop coordinated training activities..... 10
Objective 3.1..... 10
Objective 3.2
Coordination of Training Activities 10
Objective 3.3
Goal 4. To develop a statewide equipment exchange program..... 12
Objective 4.1..... 12
Objective 4.2..... 12
Goal 5. To improve interagency cooperation..... 12
Objective 5.1
Objective 5.2
Goal 6. To establish a network of community-based technology specialists..... 13
Objective 6.1..... 13
Objective 6.2..... 14
Objective 6.3..... 15
Goal 7. To develop, implement, and evaluate a User-to-User network..... 15
Objective 7.1
Objective 7.2
Objective 7.3..... 16
Administrative and Professional Capability 16
Personnel Resources..... 16
Fiscal and Accounting System..... 17
Internal Management Plan..... 17
Activity Timeline 18
Inclusion of Individuals With Disabilities and Their Families 18
Inter-Agency/Organization Coordination 19
Plans For Continuation of ARTIS..... 20

Appendices

Appendix A Technology Access for Arkansans (TAARK)
Appendix B Work Task Timelines
Appendix C Personnel Job Descriptions and Responsibilities
Appendix D Consumer and Professional Technology Surveys
Appendix E Hyper-ABLEDATA
Appendix F Service Delivery for Assistive Technology Services
Appendix G ARTIS Information System
Appendix H Electronic Storage
Appendix I Letters of Cooperation and Support
Appendix J First South Central Technology Access Conference
Appendix K Vitae
Appendix L Project COMPACT

Technology Information System
BUDGET - YEAR 1

Budget Category	Grant Amount	UALR Contributions
Personnel		
Alan VanBiervliet, Ph.D., Principal Investigator, 25% of Academic Year (@ $34,895 p/yr for Feb.-May, 1990 [$3,877], and $36,989 p/yr for Aug. 15-Sept. 30, 1990 [$1,541])		5,418
100% May 15-June 1, 1990 @ $34,895 p/yr	1,938.66	
Leanne Whiteside, M.A. Research Associate 25% Feb.-May 1990 @ $29,260 p/yr; 10% for Aug.15-Sept. 30, 1990 @ $31,015.60	2,438	387.70
Information/Funding Specialist 100% (@ $28,000 p/yr for 7mo.)	16,333.33	
Information/Technology Specialist 100% (@ $28,000 p/yr for 6mo.)	14,000	
Subtotal	**$34,710**	**$5,805.70**
Fringe Benefits		
20% of total salaries:	**$6,942**	**$1,161.14**
Travel		
In-State Travel	2,420	
Conferences	1,700	2,400
Subtotal	**$4,120**	**$2,400**
Equipment		
Computers: (Macintosh SE-30 w/ 40Meg HD w/ 1M RAM Expansion) 4 @ $3,000		
Macintosh SE w/ 40Meg w/ 1Meg RAM Expansion) 1 @ $2,400	12,000	2,400
Document Scanner & Interface & OCR	2,000	
Laser Printer	4,500	
Dot Matrix Printer		530
CD ROM Players: @ $830	830	830
Modem & Telecommunication 2 @ $205	410	
Software: Word Processor, graphic spread sheet, desktop publishing, communications, etc	1,000	2,000
TDD & Accessories: @ $635	635	
Braille Printer & Accessories	4,500	
Speech Synthesizer Software (*e.g.*,Outspoken)	250	
Four-Track Cassette	250	
VCR & Monitor	600	
Dual Deck VCR	1,000	
Stand	200	
Video Camcorder	1,200	
Digital Video Captioning Device	1,500	
Fax Machine	1,200	
60Meg Hard Discs (or equivalent) 1 @ $600	600	
45Meg Removable Memory Cartridge drive 8 @ $900	7,200	
45 Meg Cartridges (or equivalent) 24 @ $115	2,760	
Furniture: (Desk/Chair/File/Workstation) 6 @ $700	4,200	
Subtotal	**$46,835**	**$5,760**

Budget Category	Grant Amount	UALR Contributions
Supplies		
Miscellaneous Office Supplies (Including Discs, Braille Paper, Cassettes, Video Tapes) @ $300 mo for 8 months	2,400	
Other		
Information, Books, & Databases	4,000	
Marketing	20,000	
Postage @ $250 x 8 months	2,000	
Rent @ $600 x 8 months	4,800	
Telephone: Install ($325) / Monthly ($130) x 8 months Long Distance: InWatts ($18/hr) / OutWatts ($13/hr.)	6,000	
Training	20,000	
Annual Conference	5,000	3,519
Advisory Committee Expenses	3,000	
Subtotals	**$64,800**	**$3,519**
Total Direct Costs	**$157,407**	**$18,646**
Administrative Costs (8% of Total Direct Costs)	**$12,593**	**$1,492**
TOTAL PROJECT COSTS	**$170,000**	**$20,138**

Budget Justification

Personnel

Dr. VanBiervliet will be the Principal Investigator for ARTIS. He will function as a technical facilitator across all components of ARTIS. He will assume principle responsibility for insuring compliance with design parameters of the TIS during implementation of the system. He will also serve as the system analyst for the development of the computerized information system and assist in the design and implementation of evaluation .

Leanne Whiteside, M.A., is a Research Associate at the Center for Research on Teaching and Learning at the University of Arkansas at Little Rock. She will act as a consultant to the project to assist in the design, programming, implementation, and maintenance of information retrieval, storage, and dissemination activities. She will also function in an advisory capacity to assist ARTISpersonnel with system malfunctions when they occur.

The Information/Funding Specialist will serve as a resource person for ARTISactivities which involve the dissemination of information pertaining to funding for assistive technology and services. This person will also facilitate the development of innovative relationships among agencies and third parties in Arkansas which are involved in the provision of funding for technology and services. Finally, this person will also serve to facilitate the implementation of creative legislation and policies at the regional and state level to increase the number of available funding sources for assistive technology and services.

The Information/Technology Specialist will be responsible for the development, maintenance, and evaluation of the Equipment Exchange Program and the User-to-User network as well as assisting in retrieval, storage, and dissemination of information. This person will assume responsibilities for such diverse activities as information surveys, production and dissemination of of hypermedia materials, and training activities.

Fringe Benefits

Benefits for personnel include retirement, health insurance, and workman's compensation in accordance with current University of Arkansas at Little Rock policies.

Travel

Local. Car mileage and per diem to reimburse ARTIS personnel for expenses associated with implementation of the TIS, which will include: meetings with individuals from agencies, business, and other components of the private sector to secure and provide information relevant to the TIS; travel to and from the various regions of the state where Technology Access Centers will be located; travel to sectors of the state where Regional Technology Specialists might be located; travel associated with training activities; and travel associated with marketing activities..

National. Travel for conferences will be required such that ARTIS personnel will be able to attend two national meetings, specifically the annual RESNA meeting in Washington D.C. and a meeting associated with PL 100-407 Technical Assistance Project. In addition UALR will provide funds for three additional national meetings such as the 5th Annual National Symposium on Information Technology, second staff member to RESNA, and the International Society for Alternative and Augmentative Communication.

Equipment

Computers. This equipment will be required to store and disseminate information relating to ARTIS. It will also be used in the production of multimedia materials that are disseminated through ARTIS.

Document Scanner and Interface and optical Character recognition software. These items will be used to electronically enter information into the ARTIS that is received in print or graphic formats. It will also be used to produce materials relating to information dissemination and to convert print documents into Braille.

Laser Printer. A laser printer is required to be able to create high quality desktop publishing documents for widespread information dissemination via graphic format. This will enable ARTIS staff to produce high quality, low cost publications.

Dot Matrix Printer. This printer will be used for low cost printing information that is disseminated through the ARTIS, e.g. memos.

CD ROM Players. This equipment will be used for accessing published databases such as the Cooperative Database Distribution Network for Assistive Technology.

Modem and Telecommunication. This equipment will be required to enable TIS personnel to retreive and disseminate information via telephone both statewide and nationally.

Software. This equipment will be used for word processing, creating graphic spread sheets, desktop publishing, communications, and other functions associated with the operations of the TIS.

TDD and Accessories. This equipment will be used to make ARTIS accessible to persons with hearing impairments or deafness.

Braille Printer and Accessories. This equipment will be used to make the ARTIS accessible to persons with visual impairments or blindness It will also be used to disseminate information stored in the ARTIS to persons with such disabilities.

Speech Synthesizer Software. This equipment will be used to enable auditory access to information by persons with visual impairments or blindness.

Four Track Cassette. This equipment will be used to record oral information for dissemination to persons having visual impairments, physical impairments, persons having illiteracy, and other disabilities.

VCR and Monitor. This equipment will be used for training purposes as well as to disseminate information to persons/groups who have a preference for this type of media format.

Dual Deck VCR . This equipment will be used to copy and record video tapes for information dissemination.

Stand. This equipment will be used to support and transport VCR and monitors which are used to disseminate information.

Video Camcorder. This equipment will be used to record visual information and to create digital representations of assistive devices.which can be used for information dissemination and training.

Digital Video Captioning Device. This equipment will be used for captioning video presentations for persons having hearing impairments and cognitive impairments.

Fax Machine. This equipment will be used to send printed materials both statewide and nationally to others who have such equipment.

60 Meg Hard Discs (or equivalent). This equipment will be used for information storage and retrieval in a hypermedia format. Five of these disc drives will be distributed to the TACs and three will be used by the ARTIS.

45 Meg Removable Memory Cartridge Drive. These cartridges will be used at the TACs and ARTAP for storage of the database as well as storage of other databases used in the ARTIS.

45 Meg Cartridges. This equipment will be used for data storage at the TACS and the TIS. Each TAC will receive 2 45 meg cartridges and a third cartridge will be used to transfer or mail upgrades to the TACs. The remaining cartridges will be used by ARTIS for data storage and retrieval.

Furniture. This equipment will be used to accommodate day-to-day operations of personnel of the TIS, and for the storage of print, audio, and visual materials

Supplies

Miscellaneous Office Supplies. These items will include discs, computer paper, Braille paper, cassettes, video tapes, paper, pencils, and other consumable items necessary for operation of ARTIS.

Other.

Information, Books, and Databases. These materials will be used to create and implement the TIS, to disseminate information, and to publish materials relevant to ARTIS operation.

Marketing. These resources will be shared by ARTIS and the TACS for the development and implementation of a statewide marketing plan to make Arkansans aware of ARTAP and its various functions.

Postage. These monies will be used to facilitate the dissemination of information and followup contacts via the U.S. Postal Service and to maintain the daily operations of ARTIS.

Rent. These monies will be used to acquire and maintain physical space for the housing of ARTIS.

Telephone. This equipment will be used to insure the ongoing interactions of ARTIS with all other components of the service delivery system, and to provide toll free access to information by all Arkansans.

Training. These resources are required to affect attitudinal and knowledge base changes among professionals and others in the service delivery system regarding the purpose and operation of ARTAP. These resources will be shared by ARTIS and the TACS for the development and implementation of statewide training activities.

Annual Conference. This is required to facilitate the planning and implementation of the Second Annual South Central Technology Access Conference. This includes stipends for consumers and parents, travel expenses for at least two nationally-recognized experts in the area of technology service provision, and all costs associated with hotel/convention space for such a meeting.

Advisory Committee Expenses. This is required to assist persons serving on the Advisory Board to attend meetings that are held during the course of TIS implementation. This will include reimbursements for meals, travel, and other expenses which might be incurred such as attendant care for children and sign language interpreters.

Arkansas Technology Information System

Representing a cooperative effort to find solutions to the problems Arkansans with disabilities have in obtaining needed technology, the Arkansas Technology Access Project (ARTAP) was designed to address the technology needs of hundreds of thousands of persons with disabilities in the state. ARTAP has evolved from the Technology Access for Arkansans (TAARK) project, a state-funded, multi-agency collaborative technology state planning activity (Appendix A). The ARTAP planning endeavor reflects the unprecedented cooperation and direct involvement of over 48 persons representing persons with disabilities, their families and representatives, 25 different public and private agencies in the state, vendors, and business. Efforts have been made to insure a high degree of consumer involvement throughout the planning phases of ARTAP. A key component to maintain this level of involvement of persons with disabilities and their families in the Arkansas Technology Information System (ARTIS) is the development of a consumer-responsive advisory committee. This committee will be made up of from 7 to 9 individuals with at least 5 persons being persons with disabilities and their families. The ARTIS Advisory Committee will assist in the development, evaluation, and revision of ARTIS activities, policies, and procedures. This committee will cooperate with the ARTAP Advisory Committee and the committees established by the Technology Access Centers. Funds have been allocated in the budget to provide support and reimbursement for expenses incurred by committee members.

Plan of Activities

Following is a description of the ARTIS goals and objectives; timelines are presented in Appendix B.

Goal 1: To develop a coordinated information service system.

A large volume of information and services are currently in existence regarding technology and related services, yet the system is fragmented to such a degree that little coordination of services and dissemination of information occurs across subsystems. This results in the unfortunate situation of technology being available, though people who need the technology are unable to access it. One component needed to solve this problem is a coordinated, comprehensive, information service system.

A number of features of an information service system have been identified as being critical by Arkansans.The system must:

- provide information relevant to persons having disabilities with all types of needs;
- provide barrier-free access via a variety of levels of entry to accommodate all Arkansans irregardless of their disability;
- provide accurate, timely information in a format that is usable by persons with disabilities of all ages, their families, professionals, policy makers, and the general public;
- be operated by virtually anyone following only a few minutes of instruction;
- automatically produce print, large print, and Braille output;

- allow one to add their own notes or comments regarding products, services, vendors, regulations, etc.;
- be easily copied for distribution to whomever wants the database;
- be easily updated;
- use a format that enables sharing the information among states and regions;
- automatically generate letters (in print, large print, and Braille) for contacting service providers, vendors, etc.;
- provide a mechanism for automatically phoning service providers, vendors, consumers, volunteers, etc;
- provide a mechanism for documenting all contacts with the system;
- collect and store information produced at remote sites (e.g., information generated from the TACS);
- provide a mechanism for automatically generating follow-up letters to persons who request information; and
- be an integrated information system that enables the operator to easily access data from a variety of databases.

There should also be a strong evaluative component in order to examine usage, degrees of satisfaction expressed by users, suggestions for enhancement of the system, and other types of evaluative information. In order to develop such an information system, a management strategy is necessary to design, develop, implement, maintain, and support the system. Finally, it is acknowledged that an information system must facilitate the development of cooperative agreements and the optimum utilization and development of existing resources in order to provide comprehensive technology-related services to the citizens of Arkansas.

This goal will be achieved by three interrelated objectives: to develop a technology information system; to disseminate the information system across the state; and to evaluate the effectiveness of the system.

Objective 1.1: To develop a computer-based information and referral network accessible to all Arkansans.

Personnel

For a description of the responsibilities of the ARTIS personnel, see Appendix C and the Budget Justification.

Arkansas Database Development

The strength of any information system is reflected in the quality (i.e., comprehensiveness and accuracy) of the information it provides and the ease with which users can access the information. In order to ensure that ARTIS ranks high on both of these quality indicators, both national and Arkansas-based information on technology and services will be gathered into a user friendly hypermedia format.

One of the primary mechanisms available for obtaining information is automated indexes, or databases. Numerous databases will be obtained and/or accessed by ARTIS, including Hyper-ABLEDATA, ERIC, SpecialNET, COMPUSERVE, DD Connection, DeafNET, CEC's Technology Net, Service Delivery Resource Directory, and other information systems as identified. The Arkansas Technology Resource Center will collaborate with ARTIS in securing information about assistive devices, services, and funding through the AppleLink network (Appendix I). Existing databases, however, do not contain information that is specific to accessing technology in Arkansas. ARTIS needs to be able to provide consumers, their families, professionals, and the general public with information on accessing services in their local community, funding provisions and other procedures, and information about quality vendors and service providers. Two concurrent processes will take place in order to fill this need: information gathering and hypermedia software development.

A concerted and ongoing effort to identify resources for the provision of technology and related services in Arkansas and surrounding states will be undertaken throughout this project. It is very important to include information about services in surrounding states because, depending on where one lives, the most appropriate services for that person might be in another state. For example, if a person lives in Helena, s/he might access services in Memphis, or if s/he lives in Hope, they might access services in Texarkana, TX. ARTIS staff will work closely with the DHS field offices, individuals, and private organizations to identify appropriate contacts in municipalities throughout the state. Consumer and professional questionnaires will be designed such that persons having expertise in the field of technology service provision can be identified (see Appendix D for an example of such a instrument). Questionnaires forwarded to individuals, organizations, and agencies, as well as telephone contacts to these individuals and groups, will be used to acquire specific information relevant to the kinds of technology related services provided. Existing registries will also be reviewed to gather information. Letters of request will be forwarded to organizations and agencies in bordering states asking for information and printed materials pertaining to the types of services they provide. Agencies, such as Children's Medical Services, will be contacted to identify vendors and service providers in bordering states. Also, national databases on services will be reviewed to identify service providers and vendors in bordering states. Local vendors of assistive technology and technology-related services, as well as groups/agencies providing such services, will also be contacted and requested to provide information needed to build the ARTIS. This information-gathering process will be completed by August, 1990, though the process of updating and revising the system will be an on-going activity throughout the life of the system.

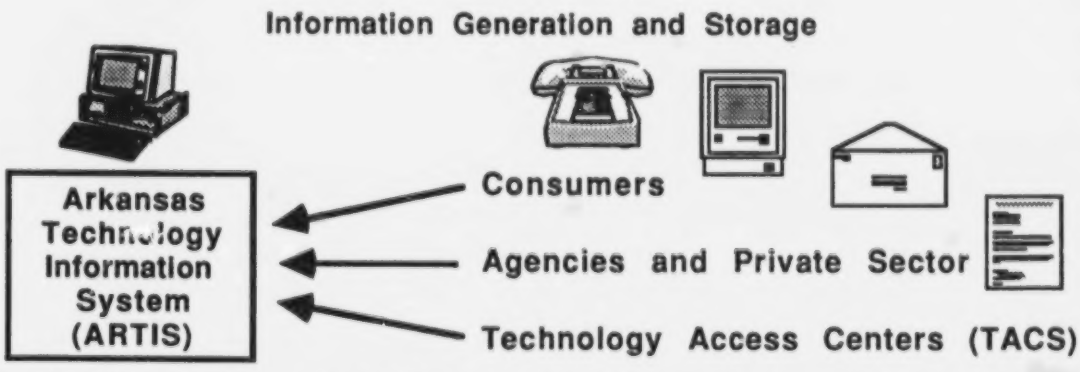


Figure 1. Information Generation and Storage. Process consists of ARTIS staff gathering data from existing sources, and consumers, agencies/private sector, and TACS sending informationto ARTIS (in response to surveys, telephone inquiries, and ongoing re-quests for information) via telephone, computer, or written contact.This information is then entered into the hypermedia data base for storage.

The information access system that will be developed for ARTIS will incorporate state-of-the-art hypermedia concepts and technologies. Hypermedia is an information storage and usage design that enables text, graphics, animations, and sound to be combined and outputted to suit individual needs. Any piece of information can be connected and outputed with any other piece of information enabling the operator to find as much or as little about a topic as is needed. Use of these

technologies will enable the information system to evolve with needs and to maintain more flexible output and input for future developments. Appropriate use of the hypermedia approach will enable ARTIS to output information to meet the needs of a broad range of consumer needs through a wide range of forms, such as print, Braille, audio, and visual.

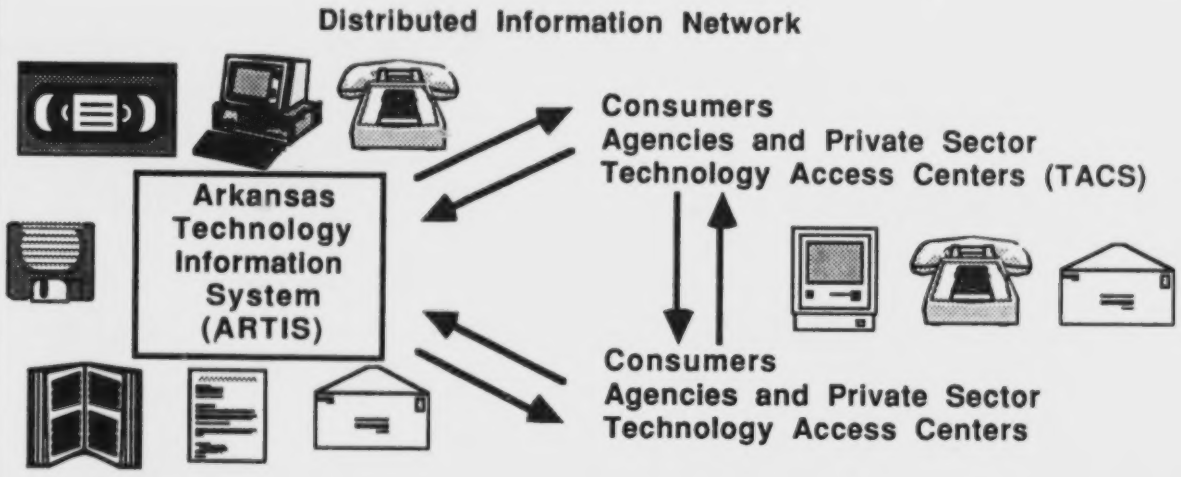


Figure 2. Distribution and Information Retrieval. Information is disseminated from ARTIS via multimedia formats including print, large print, telephone, diskette, videotape, cassette tape, computer, print, and Braille. All TACS and any individual or agency who request will also receive a current copy of the database for their own use and distribution.

In order to maximize the use of time , the development of the hypermedia based information storage and retrieval system will occur concurrently with the information-gathering activities. The design of the system will combine the features of existing referral systems, such as the South Carolina Handicapped Services Information System report and letter generation capabilities, with the user friendliness and modularity of HyperCard programs, such as Hyper-ABLEDATA (see Appendix E) and the Service Delivery Directory for Assistive Technology Services (see Appendix F). An object-based programming environment called HyperCard will be used to design the system to allow rapid prototyping and so that modifications can be easily made as system requirements change. In order to maintain compatibility with national information retrieval networks being created by RESNA and the PL 100-407 Technical Assistance Project, to ensure that the ARTIS system is completed on schedule, and to ensure that ARTIS consists of a truly user friendly, easy to learn, barrier free operating system, the Macintosh computer was selected as the initial development platform. With the recent introduction of the OutSpoken software for the visually impaired, there are now software and devices (e.g., Headmaster and Voice Navigator) that enable the MacIntosh to be accessible to virtually everyone *irregardless of their disability*. During year 2 of ARTIS, the information system will be developed, tested, and disseminated for IBM and compatible computers (see Appendix G for an article describing how this conversion could occur). This two-phase development process is very common in the computer software industry. The system will also be designed to operate under multitasking. Multitasking capabilities will enable the

Information Specialists to access requested technology information even when they are in the middle of some other computer intensive task, such as conference planning, when a phone inquiry arrives.

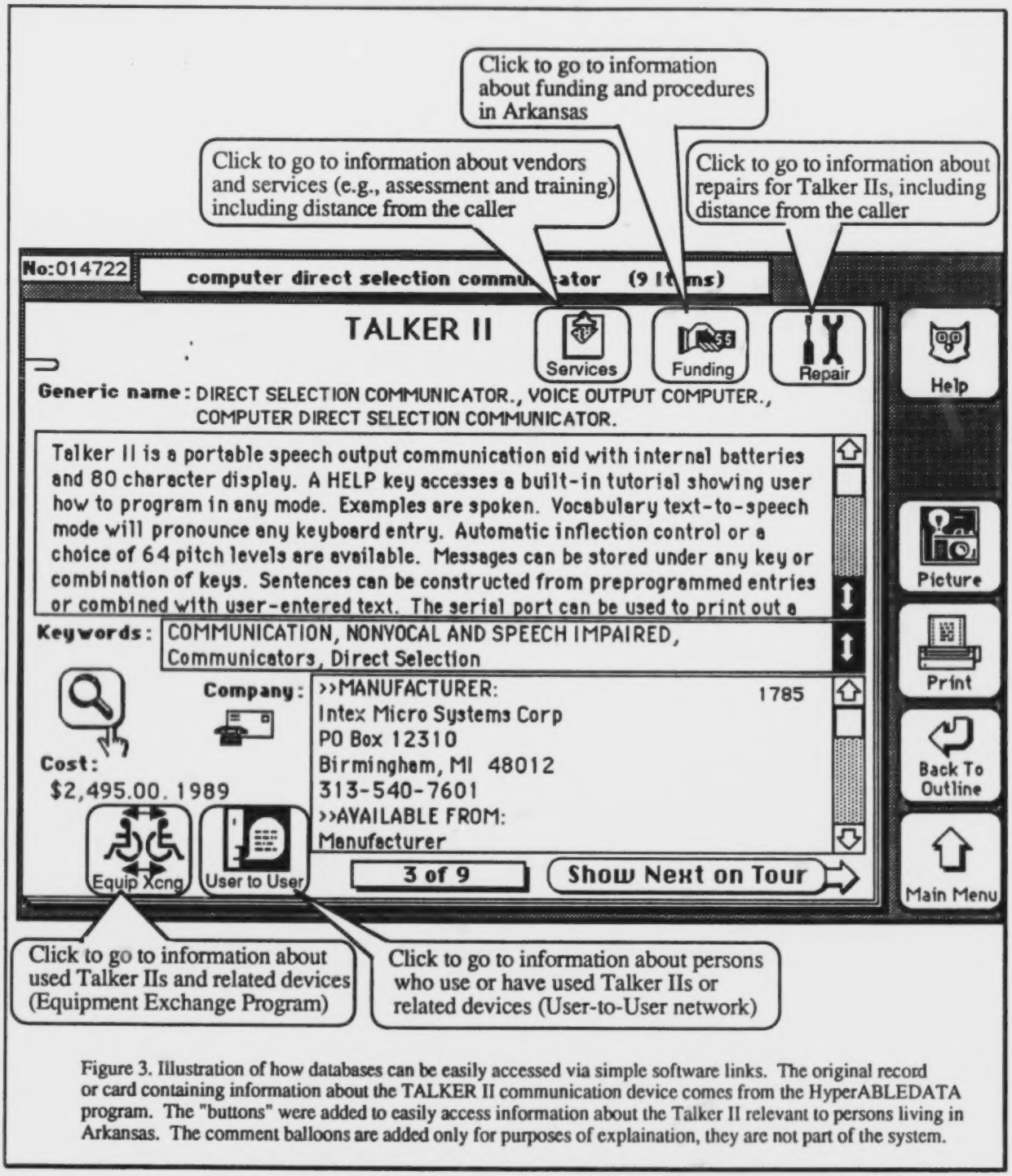

Click to go to information about funding and procedures in Arkansas
Click to go to information about vendors and services (e.g., assessment and training) including distance from the caller
Click to go to information about repairs for Talker IIs, including distance from the caller
No:014722
computer direct selection commu ator (9 It ms)
TALKER II
Services
Funding
Repair
Help
Generic name: DIRECT SELECTION COMMUNICATOR., VOICE OUTPUT COMPUTER., COMPUTER DIRECT SELECTION COMMUNICATOR.
Talker II is a portable speech output communication aid with internal batteries and 80 character display. A HELP key accesses a built-in tutorial showing user how to program in any mode. Examples are spoken. Vocabulary text-to-speech mode will pronounce any keyboard entry. Automatic inflection control or a choice of 64 pitch levels are available. Messages can be stored under any key or combination of keys. Sentences can be constructed from preprogrammed entries or combined with user-entered text. The serial port can be used to print out a
Picture
Keywords: COMMUNICATION, NONVOCAL AND SPEECH IMPAIRED, Communicators, Direct Selection
Print
Company:
>>MANUFACTURER: 1785
Intex Micro Systems Corp
PO Box 12310
Birmingham, MI 48012
313-540-7601
>>AVAILABLE FROM:
Manufacturer
Back To Outline
Cost:
$2,495.00. 1989
Equip Xcng
User to User
3 of 9
Show Next on Tour
Main Menu
Click to go to information about used Talker IIs and related devices (Equipment Exchange Program)
Click to go to information about persons who use or have used Talker IIs or related devices (User-to-User network)

Figure 3. Illustration of how databases can be easily accessed via simple software links. The original record or card containing information about the TALKER II communication device comes from the HyperABLEDATA program. The "buttons" were added to easily access information about the Talker II relevant to persons living in Arkansas. The comment balloons are added only for purposes of explaination, they are not part of the system.

The ARTIS system will consist of Hyper-ABLEDATA*, which contains text, pictures and audio information about 16,000 assistive devices (see Appendix E), the Service Delivery Directory for Assistive Technology Services, which contains information about assistive device services across the U.S. (see Appendix F), the Equipment Exchange Program (see Goal 4), the User-to-User Network (see Goal 7), and information about assistive device vendors, services, and regulations in Arkansas and the surrounding region. When searching for information in one of these linked databases, the operator will be able to instantly access information from any other database by a simple click of the mouse (see the preceding Figure 3 for an illustration of these information links, and refer to Appendix G for a more detailed description of the proposed system). For example, while searching for information about direct selection communicators, the operator can click on a button to: find out the nearest vendor; get information about funding for the device; find out who provides maintenance and repair services for the device; locate the closest speech therapist with augmentative communication expertise; check whether a used device is available (Equipment Exchange Program); locate a unit for trial or demonstration purposes; and identify a consumer who can provide practical advice about the device (User-to-User Network). Any of this information could be provided over the phone and immediately printed (in large print or Braille if necessary) or electronically stored on disc and mailed to the caller. The information could also be read onto audio tape and mailed. In addition, ARTIS will maintain a collection of manufacturers', vendors', and service providers' pamphlets and promotional materials and other literature on assistive devices (e.g., equipment reviews) for distribution. In cooperation with the TACs, ARTIS will develop and distribute materials about assistive devices, services, and funding.

Many device manufacturers and organizations (e.g., Pennsylvania Assistive Device Center) have produced numerous demonstration/training video tapes. ARTIS will obtain copies of these tapes for distribution throughout Arkansas. ARTIS, in cooperation with the TACs, will also produce and distribute new training/demonstration video tapes. With the widespread use of VCRs throughout Arkansas, video tape-based material will be an important means for providing information.

Since such a massive amount of information will be stored in the ARTIS system, a large digital storage device, such as a large hard disc, compact disc, or removable cartridge memory will be required to store the system. Following a careful review of the characteristics of existing electronic storage devices, 45 megabyte removable cartridge drives were selected as the storage medium that best fits capacity, portability, modifiability, cost, speed, and standardization specifications (see Appendix H). Removable cartridge drives enable the storage of large databases, with virtually unlimited storage capacity (i.e., simply insert another disc to access additional information). The cartridges are easily transported from one location to another enabling a distributed database network to be rapidly updated (e.g., simply mail updated cartridges to the TACs). Updating can also occur via telecommunication. In the future, ARTIS might use an alternative storage medium, such as erasable optical discs as these technologies become standardized, readily accessible, and cost efficient.

In order to provide an additional means for Arkansans to communicate with ARTIS, an electronic bulletin will be developed to enable individuals and groups to obtain information and to leave messages any time of day or night. The development of this bulletin board has already begun as part of the TAARK Project.

Prior to the final design of the ARTIS hypermedia information system, a thorough search of the literature and a review of existing system features will be conducted. The information system design will be reviewed by the advisory

---

* Note: Hyper-ABLEDATA is currently not accessible to persons with severe visual impairments; modifications will be made by ARTIS staff to make this program totally accessible.

committee to ensure that it meets all ARTAP specifications, particularly the accessibility requirements, prior to programming. The system will will be available for initial testing by August, 1990.

Training will be provided to the ARTIS staff between February and August, 1990, in order to activate the system and ensure optimum effectiveness in disseminating information. Barrier awareness training is crucial in the training of persons providing services in ARTIS. The ARTIS staff would also be trained in advocacy skills, by staff from Advocacy Services, Inc., since this would become an important function of these resource persons on a state and local levels (see Appendix I). The information system will be fully operational by October, 1990.

Objective 1.2: To disseminate the information system across the state.

After the information system has passed field testing by the ARTIS staff, it will be distributed throughout the ARTAP network. In year 2, teams of regional technology specialists (see Goal 6) will be established across the state to act as resources in their respective regions. Information will flow outward from the ARTIS to the various TACs, regional technology specialists, and to others accessing the system. Information will also flow inward from these sources to ARTIS. The hypermedia-based information system will be available for TAC staff and the regional technology specialists to use in their locales. Since the information system will be designed to operate on readily available, low-cost microcomputers, existing equipment will be able to be used in most instances.

Between September 1 and November 1, 1990, information dissemination to the various TACs across the state will begin. Personnel in the various TACs will be trained during this period by ARTIS staff in the procedures for accessing the ARTIS system and how to submit data for entry into the system. This training will also focus on barrier awareness, advocacy, telephone etiquette, and problem-solving.

Between July 15, 1991 and September 15, 1991, information dissemination to the 8 teams of regional technology specialists will be a target activity. Many of these regional technology specialists will have access to technology that would enable them to access databases available in the ARTIS, which they, in turn, would disseminate to persons on a local level. The information in the database will also be published in a ring binder format, the Information System Binder, for use by individuals and organizations who do not have access to computer equipment. This binder will be disseminated to agencies and organizations involved with persons with disabilities, such as the 15 educational cooperatives in Arkansas, as well as to others upon request. The Information System Binder will also be used as a training tool for consumers, professional inservice, and for university students. The digital information system and the Information System Binder will also be shared with persons involved with technology access in other states.

Objective 1.3: To evaluate the technology information system

Evaluation of ARTIS will incorporate multiple evaluation techniques and sources of information throughout the program. One evaluation technique involves gathering satisfaction and grievance information and analyzing it for patterns which highlight both strengths and weaknesses of the system. Each person accessing the ARTIS will be contacted via a telephone call by ARTIS staff within 1 month of their call to determine whether needed services were obtained and to ascertain the recipient's level of satisfaction with services received. Service recipients will be made aware of grievance processes on their initial entry into the system. Since the Division of Rehabilitation Services has been designated as the lead agency for the administration of ARTAP, grievance processes would be accessed through the Division of Rehabilitation Services'

internal procedures for lodging complaints. Persons who use the information system will also be asked to provide demographic information, information concerning their needs, and how they learned of the ARTIS services. Similar strategies will be used by the TACs to evaluate their use of the information system. However, provision of personnel information will ***never*** be a requirement in order to obtain information or services.

Since needs assessments are an ongoing activity of many public and private agencies/groups, ARTIS personnel will insure that many of these needs assessments, e.g., Division of Rehabilitation Services, Governor's Developmental Disabilities Planning Council, Division of Aging and Adult Services, etc., will contain questions having bearing on the ARTIS. At the beginning of the third year of the ARTAP implementation phase, a comprehensive needs assessment will be conducted involving all persons who have accessed the ARTIS system, as well as consumers and professionals.

Other forms of evaluation of the ARTIS would include (1) progress reports submitted from the TAARK study groups which act in an advisory capacity to the ARTAP Advisory Council; (2) input from the federal technical assistance program; (3) quarterly reports from the TACs; (4) informal contacts made by consumers with the ARTAP Advisory Council; (5) examination of the number of requests for information; and (6) anecdotal records. Evaluation activities will begin July, 1990, and will be ongoing throughout ARTAP implementation.

Goal 2: To establish a marketing and public awareness campaign to promote the benefits and use of technology for persons with disabilities.

Earlier findings of the TAARK (1989) Information Dissemination and Public Awareness Study Group have indicated that a centralized, comprehensive information system accessible by all Arkansans with disabilities *should be marketed to all citizens for use*. Like training (Goal 4), marketing is a shared activity among the ARTIS and TACS for the benefit of the entire ARTAP program. Marketing strategies and expenditures will be determined by a committee made up of representatives from the ARTIS and TACS. The Marketing Specialist will coordinate this committee.

Objective 2.1: To develop a comprehensive marketing and public awareness plan.

A comprehensive marketing and public awareness plan will be developed by the Marketing Specialist, and a marketing firm and reviewed and approved by the ARTAP Advisory Committee no later than May, 1989.

The comprehensive marketing plan will include a variety of activities. Target audiences for the campaign will first be identified for marketing strategies, e.g., employers, consumers, general public, etc. Television and radio public service announcements (PSAs) will be designed to focus on various issues relating to technology, such as its use in recreation, education, daily living, and employment. Press packets will be prepared which include guidelines for writing about persons with disabilities, background regarding ARTAP, and human interest stories highlighting how technology has impacted upon and enhanced the quality of life for specific persons with disabilities. Factsheets and/or brochures will be prepared relative to technology etiquette. "Ad slicks" will be developed that are suitable for reproduction and which promote the use of technology with persons having disabilities. Quarterly news releases announcing the initiation of ARTAP as well as progress of the project will be developed during the implementation phase. A series of project description/access brochures will be developed that target various audiences, including employers, educators, persons with disabilities, parents, and other groups.

Important resources for the awareness campaign will be the print, video, and slide show materials that were developed by the Division of Rehabilitation Services' Explorer Program (Gaskin & Long, 1987). The developers of the Explorer Program used Arkansas-based examples of persons using assistive technology to produce the nationally acclaimed multimedia awareness program.

All marketing materials as well as the proposed distribution strategies will be reviewed by the ARTAP Advisory Committee and its subcommittees by July, 1990. Other consumer and advocacy groups will also be provided the opportunity to review the marketing materials and strategies that are developed. This review process will result in the marketing materials and distribution plan being revised by August, 1990.

Objective 2.2: ***To implement a comprehensive marketing and public awareness campaign.***

Implementation of the marketing and public awareness campaign will entail a multifaceted approach. Television and radio PSAs will be distributed to stations in Little Rock and surrounding states. A consumer-organized/hosted press conference/reception to announce the initiation of ARTAP, ARTIS, and TACS will be conducted. Updates of information regarding ARTAP and its activities will be disseminated via quarterly news releases. "Ad slicks" on technology will be distributed on a wide scale to all printed news media, trade publications, pertinent organizations, civic clubs, and other targeted audiences. Talk shows and news shows that focus on technology utilization and its benefits with persons having disabilities will be promoted on radio and television. Brochures will be distributed widely throughout the state to targeted audiences such as employers, educators, consumers, and other groups. ARTAP personnel will participate in conferences and conventions statewide to promote the project. This will include such meetings as the Special Show for educators, Arkansas Rehabilitation Association, Arkansas Council for Exceptional Children, AARP, and meetings of physicians, businessmen, potential employers, and advocacy groups. A consumer/ parent/ professional speakers' bureau will be developed comprised of persons willing to make presentations about people with disabilities and the benefits of using technology. ARTAP will utilize existing speakers' bureaus developed by the Coalition for the Handicapped and other consumer groups in the state.

In addition, information about ARTAP and its information services will be included in the statewide barrier awareness program that has been coordinated by the Association for Retarded Citizens. This program is conducted in schools and other public facilities and includes a wide range of simulation activities designed to sensitize people to the challenges facing persons with disabilities.

The production of public awareness campaign materials will begin in April, 1990, and preliminary materials will be available by August, 1990. The development and revision of marketing materials will be an ongoing activity throughout the life of the project.

Objective 2.3: ***To evaluate the effectiveness of the campaign toward enhancing public awareness of technology and its benefits.***

Evaluation of the ARTAP marketing and public awareness campaign will involve recording and analyzing a wide variety of events including: the number of times PSAs are aired; the number of times that articles appear in press, as well as the types of publications in which they appear; the number of "ad slicks" that appear in publications; the number of brochures distributed to the general public, professional audiences, consumers, and other groups; the number of news/talk shows on

which information relating to technology and its uses has appeared the number of presentations relating to technology usage with persons with disabilities made at conferences and conventions; and the number of presentations made via the consumer/professional speakers' bureau. Pre- and posttests will be used in presentations to determine the level of expanded awareness created. A final component of the evaluation process will be the number of callers who respond to a question regarding the source of their knowledge of ARTAP and correspondingly voice their awareness of ARTAP as a result of some particular component of the campaign, e.g., a television PSA or brochure.

Goal 3: To develop coordinated training activities for consumers, their families, professionals, employers and the general public concerning technology-related services.

Objective 3.1: To identify training needs and mechanisms for training.

The various study groups of the TAARK project are currently active and will remain active in an advisory capacity to the ARTAP Advisory Council. Existing needs assessments conducted by a variety of public and private agencies, including the TAARK surveys (Appendix D), will be examined to identify training needs relevant to assistive devices. A Training Committee will be formed by representatives of the TACS and the ARTIS. An Information Specialist with expertise in training will serve as coordinator for the Committee. The Training Committee will make decisions about training priorities, approaches, and expenditures.

Objective 3.2: To develop and implement a system of training.

ARTIS staff as well as TAC personnel will conduct training activities in the area of assistive technology at the state meetings for the following groups: Association for Retarded Citizens/Arkansas, Department of Education Special Show, Arkansas Association on Deafness, Division of Aging and Adult Services, Arkansas Rehabilitation Association Conference, and the Arkansas Association for Learning Disabilities. In 1991, the Self-Help for Hard-of-Hearing International Conference will be hosted in Arkansas and ARTAP personnel will develop appropriate training activities to be incorporated into the program of this meeting. It is projected that at least 300 consumers and professionals per year will receive training through ARTAP.

Since colleges and universities are principle sources of training for professionals, ARTIS personnel will develop interdisciplinary, university-based training activities that will be extended to at least 100 students per year from various fields, including speech therapy, occupational and physical therapy, rehabilitation counseling, and special education. Efforts will be made to enlist students to serve as interns to work in the ARTIS and TACS.

Contacts will be made with numerous public and private agencies in an effort to develop cooperative in-service training activities. These cooperative efforts will result in the provision of at least 12 inservice training sessions per year being provided to identified target audiences.

Coordination of Training Activities

Since most public and private agencies/groups are already involved in training, it is important that ARTAP utilize existing training models to the maximum extent possible. Efforts will be made to incorporate technology training into the various activities funded by the University of Arkansas-University Affiliated Program which currently acts as a conduit for

numerous projects related to the field of developmental disabilities. Cooperative training activities for professionals and consumers alike will be developed with the Research and Training Centers within the Division of Rehabilitation Services. Non-profit agencies such as the Arkansas Easter Seal Society and the Arkansas Special Education Resource Center will also be contacted and collaborative training activities will be developed in the area of assistive technology and related services. Another excellent source for the coordination of training regarding technology is the Rehabilitation Continuing Education Program (RCEP). A variety of public and private groups will be contacted to develop cooperative training endeavors developed subsequent to these contacts.

ARTAP will coordinate an annual regional meeting on assistive technology and service delivery system. This conference will provide information and hands-on training to a large number of persons with disabilities, family members, professionals, and others. The conferences will also serve as organizational meetings for Regional Technology Specialists. In order to encourage the participation of as many persons with disabilities and family members as possible, financial assistance will be provided to offset conference costs. The First South Central Technology Access Conference was held on December 4-5, 1989, in Little Rock. The meeting was a major success with approximately 200 attendees (See Appendix J for a report of the conference).

In order to facilitate maximum information dissemination relating to assistive technology and technology-related services, ARTAP will investigate and use distance teaching approaches (e.g., conference calls, teleconferences, and instructional video tapes) in order to reach statewide audiences. These instructional techniques have proven to be highly effective and cost efficient. ARTAP staff will identify distance instruction resources that exist throughout the state, such as public television stations and universities, and then develop cooperative agreements to co-sponsor the instructional programs.

Objective 3.3: To evaluate the ARTAP training system.

The evaluation of the ARTAP training process will include systemmatically collecting descriptive and outcome information on each training activity. This information will include: the topic of the training; the format of the training (e.g., demonstration, lecture, workshop); a list of the presenters; the location of the training; the number and characteristics of the attendees; the costs of the training program; the resources and equipment used; and the cooperative arrangements that facilitated the training. Comparison of this information to established training plans and priorities will enable decisions to be reached concerning the accomplishments of training goals.

Outcome measurements will consist of satisfaction questionnaires completed by the participants and the survey of current training needs regarding technology and services. Analysis of the satisfaction questionnaires and comparison of the results to established training priorities will enable the Training Coordinator to determine the success of the training activity and the progress toward achieving the activity's stated goal. The analysis of this information will also enable the Training Coordinator to determine the effectiveness of various training formats (e.g., comparison of the effectiveness of lecture presentations to video taped programs).

During the third year of this project, consumer and professional technology needs surveys will be conducted. These surveys will be similar to the surveys conducted during the Spring of 1989 (see Appendix D). Comparisons of the results of these surveys will enable the ARTAP staff to determine the overall impact of the training activities to the identified needs. In addition, cooperative agreements for the collection and sharing of information will be established with other agencies and groups so that questions concerning technology training needs will be included in their needs assessment activities.

Goal 4: To develop a statewide equipment exchange program for for used assistive devices.

Objective 4.1: To create a registry of equipment statewide and regionally.

A variety of activities relating to the implementation of ARTAP will incorporate strategies designed to elicit consumer response to requests for participation in the development of the registry system. The marketing plan will address the issue of how to best acquire information from consumers as well as how to optimally insure their participation in the system. Policies for the registry will be designed by ARTIS personnel with the input of the ARTIS and ARTAP Advisory Committees. The information regarding used assistive devices will be stored in the ARTIS database to be accessible to all persons in the state. "Want ad" style publications in print, Braille, and audio formats relating to the availability of used assistive devices will be periodically produced and distributed widely. The information base will be continually updated on a regular basis via the design of a "self-clearing" database. Links to existing equipment registries, such as that at Children's Medical Services, will also be developed.

Objective 4.2: To evaluate the Equipment Exchange Program.

Components of the ARTIS evaluation strategies that are specific to the Equipment Exchange network are the examination of the actual number of items in the system, and the matches between available equipment and requests. Telephone contacts made by ARTIS personnel with consumers who have entered the system in need of selling, trading, or acquiring used assistive technology will function to determine levels of satisfaction with the Equipment Exchange Program.

Goal 5: To improve interagency cooperation in the development of consumer responsive policies and procedures regarding technology services.

Objective 5.1: To establish an Interagency Council

The Governor will establish an Interagency Council to work with ARTAP. This Council will consist of policy-making staff from the relevant departments and divisions. The Interagency Council's role is the identification and solution to barriers caused by state regulations and procedures, such as purchasing processes for client services and devices. In order to facilitate change within the existing service delivery system, it is critical that cooperative agreements are created among agencies/groups throughout the state. These agreements will be designed to develop new and creative means of funding needed technology and related services for persons with disabilities.

One Information Specialist will have a specialty in technology funding and this person will serve as the staff person of the Interagency Council. This person will have responsibility for assisting in identifying barriers and solutions to funding issues. This person will facilitate the development of new guidelines for funding technology through the public and private insurance agencies. The Information Specialist will also be primarily responsible for designing methodologies in conjunction with the marketing specialist for educating the public with regard to technology funding mechanisms available in the state. Guidelines on funding for Arkansans with disabilities will be developed and published through the ARTIS, the TACs, and later through the regional technology specialists.

ARTIS personnel will also obtain information from the TAARK study groups, the Interagency Committee on Self-Sufficiency for Persons with Disabilities, and the DHS Division of Developmental Disabilities Long-Term Care Committee. In addition, the qualitative data gathered from persons accessing the Information System will be analyzed to identify barriers and possible solutions to technology-related policies and procedures. This information will be used to design strategies for training and advocacy which will focus on changing state procedures relevant to state purchasing. Training activities will be developed by the ARTIS personnel which initially target purchasing personnel and provide information pertaining to the impact of their activities on the needs of persons with disabilities. ARTIS personnel will organize training sessions regarding funding, technology benefits, technology access, barrier awareness, and advocacy for at least three groups of leadership personnel during year 1. These groups will include the Interagency Council, the Long-Term Care Planning Committee, and the Interagency Committee on Self-Sufficiency for Persons with Disabilities.

Objective 5.2: To evaluate the effectiveness of the interagency activities

Evaluation will concentrate on three levels of activities relating to ARTAP involvement in facilitating changes in the policies related to technology access. An examination of the number of pre-grant cooperative agreements versus post-grant agreements will be initiated, providing an index of change within the system. Also, during the process of providing training to policy makers regarding technology access issues, documentation of whether training occurred and the satisfaction with that training will be collected and analyzed. Finally, a comparison will be made between the policy barriers that are identified and the success of the solutions to those barriers.

Goal 6: To establish a network of community-based technology specialists responsive to consumers and their families.

One of the needs recognized by the Consumer Committee and others is the need to ensure that there are technology support systems developed at local levels. There are numerous barriers to technology access facing Arkansans, such as the lack of transportation services, and the lack of trained professionals for evaluation, implementation, and follow-up for assistive technology. One approach to addressing these problems is to establish a network of teams of trained technology specialists throughout the state who can assist in identifying local barriers and solutions, implement those solutions, identify local training needs, conduct and sponsor training on a local level, coordinate local resources, and provide information to ARTIS concerning local resources and needs. In addition, the Regional Technology Specialists will assist in organizing local resources, such as the Pioneers of America and technical college students, as support for ongoing assistive device services.

Objective 6.1: To develop regional technology teams.

Based on surveys of consumers and professionals conducted by the TAARK project, considerable information currently exists regarding names and locations of persons having interest or expertise in technology service provision in each of the 8 regions of the state. This data will provide ARTIS personnel with an initial pool of individuals to contact in its efforts to develop community-based resources. Advertising in state and local newspapers, agency/group newsletters, and at various state conferences will enable considerable information dissemination with regard to the Regional Technology Specialists Program and generate an applicant pool for the positions as regional technology specialists. One of the ARTIS information specialists will coordinate the Regional Technology Specialists Program. The marketing of this program will be

coordinated by the Marketing Specialist assigned to the ARTIS. Technology Regional Specialists could be consumers, family members, professionals, retired persons, etc. The recruiting procedures will be designed to specifically encourage the participation of persons with disabilities and their families. The primary criteria is that they have a special interest and capability for promoting assistive device technology and services in their area.

Contacts made to the pool of persons who have expressed an interest or expertise in technology will narrow the field of applicants such that interviews can be conducted in the regions where the applicants reside. Training will be provided to each applicant in their respective region by ARTIS personnel from September, 1990, to March, 1991. Training will specifically focus on accessing the ARTIS, the TACs and other components of the existing service delivery system, funding issues, technology benefits, barrier awareness, and advocacy. A notebook containing guidelines for accessing the system, procedures employed, and other pertinent information (developed by ARTIS staff) will be used in this process. Selections of regional technology specialists by June, 1991, will be based on criteria established by ARTIS staff in consultation with the ARTIS and ARTAP Advisory Committees. Following the initial training, all technology specialists will meet at least twice a year for additional training and to identify common problems and solutions.

One team of 3-5 specialists, including a coordinator, will be selected from each region. The coordinator will have primary responsibility for overseeing the activities of the team in his/her respective region. Each team will be encouraged to facilitate a sponsoring relationship with some agency/group in a community in the region where they will be functioning as resource persons. Affiliation is deemed to be important so that each team will have a physical space wherein equipment and other materials can be housed, meetings be conducted, messages be received from outlying communities, and other activities transpire that are necessary for the performance of team responsibilities. The development of contractual agreements with agencies/groups within each region will be another important function of the team of technology specialists. Such agreements are necessary to optimally utilize existing resources for the provision of technology and related services for persons with disabilities in each region, as well as to develop new and creative approaches to the provision of such services.

Objective 6.2: To provide training and technical assistance to the technology teams and to persons in the regions.

To determine needs, share information, and other interactions, support to each regional technology team will be provided through the ARTIS and TAC personnel as appropriate. Semi-monthly telephone contacts will be made to the coordinator of each regional team to determine needs, share information, and other interactions as appropriate.

Training provided to consumers and professionals in their regions and other types of assistance regarding technology service provision will be a principle activity for the team members. Each member will accept requests for services from persons in his/her region and facilitate the provision of that service to the greatest extent possible. The regional technology specialists will be encouraged to develop local support networks involving consumers, parents, professionals, and the business community. The tasks of the support networks will be to identify and develop solutions to technology access barriers in their communities. The regional technology specialists will use existing resources in the community to the maximum extent possible as well as drawing on the combined resources of the ARTIS and TACs in the provision of training to persons in their regions.

Objective 6.3: To evaluate the network of regional technology specialists.

As with other aspects of ARTAP project evaluation, multiple techniques will be used to determine the effectiveness of the Regional Technology Specialists Program. Each coordinator will compile quarterly reports relating to the types of activities in which his/her team has participated during that period of reporting. Monthly payments will be made contingent upon the submission of the reports indicating an active involvement of team members in improving technology access and services to persons with disabilities. The number of referrals made by the specialists in each region will be examined to ascertain implementation impact on each region of the state. Comparisons of the number of referrals contrasted with the population base of each region will provide performance measures. Inquiries made to the TACs across the state will also provide information relating to the impact of the regional technology specialists on their respective regions. Evaluation of the quarterly reports will also provide information concerning the number and range of activities involving the technology specialists. ARTIS personnel will periodically contact the TACs and ask specific questions regarding their perceptions of the roles played by the technology specialists. The technology specialists themselves will be surveyed periodically and questioned about their effectiveness and satisfaction in their roles. Since longevity in a particular position is often an index of satisfaction, documentation will be maintained of each technology specialist's length of affiliation with the Regional Technology Specialist program.

The number of training activities conducted by the regional technology specialists in their respective regions will also be used to evaluate this component of ARTIS implementation. Records of attendees present at these training activities will be forwarded to ARTIS for summary and evaluation. Surveys of service agencies and groups in each region will be made by ARTIS staff on a periodic basis to ascertain the level of involvement of the regional technology specialists with such agencies and groups, and to determine the perceptions of these service providers towards the technology specialists and their effectiveness in the region. Finally, examination of the number of complaints filed with the ARTIS, TACs, or other service agencies will provide information necessary for evaluation.

Goal 7: To develop, implement, and evaluate a User-to-User network.

The User-to-User network will place parents, consumers, and families in touch with other individuals who have used specific types of technology. Such a referral and support system will provide a tremendous service to potential users of technology who too often purchase technology that is inappropriate for their needs.

Objective 7.1: To identify individuals to participate in a User-to-User network.

Participants in the User-to-User network will be identified employing a variety of previously effective approaches. The marketing campaign will initially facilitate interest in the network based on awareness activities conducted statewide. This will include publication of information in state newsletters, presentations at meetings and conferences, in-service presentations, public service announcements, teleconference presentations, videotape presentations disseminated statewide, and other medium for the transfer of information. Information disseminated through ARTIS to each of the TACs will result in contacts of persons for participation. Letters and brochures explaining the program and requesting nominations for participants will also be sent to advocacy groups, professionals and organizations working with persons who have disabilities. In addition, vendors of technology devices will be asked to contact customers to invite them to participate in the network. Identification of the initial pool of participants will be concluded by September, 1990.

Every person who is identified will receive a packet of materials explaining the program and their activities and a release form which must be signed before they can be entered into the network. A registry of all participants in the User-to-User network will be developed employing a computer database. This registry will be integrated into the entire system so that information can be easily accessed from a variety of points (see Appendix G). All nominations and self-referrals will be stored in this database and updated regularly as new nominations and referrals are made to the system. This activity will be completed by October, 1990.

Objective 7.2: To disseminate information relating to the User-to-User network to the TACs, and Regional Technology Specialists.

Once an initial pool of participants in the User-to-User network has been identified and information is placed on the ARTIS computer database, all TACs will be contacted by ARTIS personnel and given a digital and print listing of the names, addresses, and telephone numbers of those involved in the network. The listing will also be made available in Braille and in other forms as needed. The timeline for the completion of this activity is November, 1990. As new participants are identified by the ARTIS, this information will be forwarded to the TACs and Regional Technology Specialists coordinators in order that they might, in turn, disseminate this information to their respective team members.

Objective 7.3: To evaluate the User-to-User network.

Several techniques for evaluating the effectiveness of the User-to-User network will be employed. Examining the number of nominations of persons to participate in the network will yield information regarding the effectiveness of the marketing of the program. The number and characteristics of the persons who participate in the User-to-User training sessions will be recorded and analyzed to identify service patterns and gaps. Persons who participate in the training programs will be asked to evaluate the quality and relevance of the training they received. Semi-annually, participants in the network will also be asked to evaluate the quality of the network. The number of matches of requests for information to available user "experts" will serve as a valuable technique for evaluating the effectiveness of the system. In addition, satisfaction and recommendation questionnaires, similar to the ones used to evaluate the information system (see Goal 2), will be sent to all persons who access the User-to-User network.

Administrative and Professional Capability

This section contains a brief listing of professional experiences and a description of the management plan for insuring implementation of the various tasks.

Personnel Resources

Alan VanBiervliet, Ph.D.

Dr. VanBiervliet will be the principal investigator for ARTIS. He will function as a technical facilitator across all components of ARTIS, particularly the computerized information system and evaluation strategies. Dr. VanBiervliet is an Associate Professor in Special Education at the University of Arkansas at Little Rock. He has 15 years experience developing and evaluating assistive technologies, and in disseminating information and designing service systems involving assistive technologies (see Appendix K for a detailed vita). He has a strong background in evaluation and the pragmatic aspects of

completing projects. His assistive technology experience ranges from designing a computer assisted language center, developing the assistive technology graduate course at the University of Illinois, serving as a consultant for the USDE, development and evaluation of computer assisted learning devices, participation in nationally televised teleconferences on assistive devices, and development of a revolutionary multipurpose communication aid (Project COMPACT, see Appendix L). He serves as the principal investigator for the Technology Access for Arkansans Project (TAARK), which is the first collaborative systems change project concerning assistive technology in Arkansas. He assisted in leading the planning process for ARTAP and was the co-chair of the First South Central Technology Access Conference, Dec 4-5, 1989 (see Appendix J). This conference was rated as the most accessible meeting held in Arkansas and included extensive financial support for persons with disabilities and their families. He also directed the development and analysis of the Consumer and Professional Surveys (see Appendix D). In addition, Dr. VanBiervliet is active in organizations representing persons with disabilities and their families.

Dr. VanBiervliet is also perhaps the most experienced person in Arkansas concerning hypermedia. He received training for Apple Computer, Inc., he is one of the few Apple Certified Developers in the state, and he received training in June, 1989, by IBM, Inc. on their hypermedia development tool called Linkways. He developed a nationally recognized hypermedia based multipurpose augmentative communication aid which combines text, graphics and sound (see Appendix L). This multipurpose aid was designed to accommodate a wide range of severe disabilities. He developed several hypermedia based presentations concerning assistive technology. He also has particular expertise in desktop publishing; he serves as a consultant to faculty and staff on desktop publishing and he has conduced seminars on desktop publishing.

LeAnne Whiteside, M.A.

Ms. Whiteside is a Research Associate at UALR. She will function as a computer programmer and technical consultant for the development, implementation, and modification of the computerized information system. She spent 5 years as a systems analyst/consultant for UALR Academic Computing Services. She also served as a computer consultant for Allen Corp. of America. She is proficient in a number of programming languages and in both Macintosh and MS-DOS operating systems.

Information Specialists

These positions will be hired following the University's affirmative action procedures. Special advertising efforts will be made to ensure that the pool of applicants include persons with disabilities and minorities. Typically 25%-33% of Dr. VanBiervliet's project staff are persons with disabilities .

An organizational chart reflecting the ARTAS framework and job descriptions for key program personnel are presented in Appendix C.

Fiscal and Accounting System

The UALR Grants and Contracts Division will maintain accurate and timely fiscal records for the ARTIS budget. Grants and Contracts maintains fiscal records on a sophisticated computerized accounting system that currently manages approximately $5,000,000 in federal, state, and private grants and contracts. This system generates monthly reports that enable project directors to track expenses on a timely basis. UALR adheres to the state and federal regulations concerning fiscal management.

Internal Management Plan

To facilitate internal management of ARTIS, a performance evaluation system will be used. This system has been designed to insure effective program monitoring. The performance evaluation system will include a procedure for identifying problems in scheduling and costs, and a system for reallocation of resources as necessary. To insure that tasks are completed on time, schedules of weekly activities will be given to each ARTIS staff. Individual progress will be reported by each program worker to the Program Director on a bi-weekly basis. The Program Director will initiate these contacts by telephone calls or personal communication every second Friday. Program staff will be encouraged to identify problem areas at these times. Undoubtedly one of the most likely problems is that activities will not be completed in the scheduled time frame. The Program Director will monitor actual time spent on each task on a bi-weekly basis, comparing the predicted time allotment to the actual time being expended. This procedure will allow the Program Director time for redirecting ARTIS staff to meet important deadlines. In addition, the Program Director will use a microcomputer planning software package, such as MacProject II (CLARIS, 1988), to plan, track, and allocate resources for the specified activities.

Monthly staff meetings will be held as a means of ensuring that the entire group has input to the program as a whole. These meetings will last one to two hours in length. Participants will be asked to indicate agenda items one week prior to the meeting. The ARTIS Administrative Assistant will be responsible for recording meeting minutes. These meetings will also serve as a means of recognizing excellence and of informing ARTIS staff about the current status of the various tasks.

Activity Timeline

A display of the scope and sequence of the major ARTIS tasks is reflected in the Activity Timeline presented in Appendix B. The major tasks, personnel involved in the tasks, and proposed starting and completion dates are also indicated in this figure. This timeline will remind program workers of job responsibilities and time commitments.

Inclusion of Individuals With Disabilities and Their Families

The ARTIS proposal mirrors the action plan put forth in the ARTAP grant. This plan was developed via the TAARK Project's nationally recognized approach for involving persons with disabilities, their families, and their representatives in systems planning. Throughout the TAARK planning activities, involvement of a wide range of individuals was actively encouraged and facilitated. This process included providing information to all participants so that informed decisions could be reached, soliciting information from tens of thousands of persons across Arkansas, conducting seminars , holding a working retreat, and forming a Consumer Planning Committee.

ARTIS will continue to utilize the planning model established by TAARK. An advisory committee consisting of a majority of persons with disabilities and their families will be developed to guide planning activities and to evaluate implementation and outcomes. This committee will be responsible for evaluating the design and implementation of the information system, for evaluating the marketing plans and materials, and reviewing all "customer" related policies and procedures. The ARTIS Advisory Committee will convene monthly in order to perform the necessary guidance function. In order to ensure that the Advisory Committee members can make informed decisions, they will participate in a workshop/seminar on ARTAP, ARTIS, TACs, and PL 100-407 as their first official function. The Advisory Committee will receive an agenda and supporting materials (e.g., a copy of the marketing plan), in a format appropriate to their informational needs, prior to each meeting in order to facilitate the decision making processes. In addition, Committee

members will be reimbursed for their expenses related to participation. Whenever possible, communication technologies (e.g., conference calls) will be used to reduce the burden on participating individuals.

At important decision points, such as approval of the information system and marketing plans, the ARTAP Advisory Committee will be asked to review and evaluate the proposals. This will serve as another safety check to ensure that ARTIS is progressing in a consumer-responsive manner as planned.

A third technique for involvement consists of soliciting ratings of satisfaction and recommendations for improvements from everyone who accesses the system. This information will be used to "fine tune" the ARTIS system so that it is more effective at meeting individual needs.

A fourth technique involves solicitating the cooperation of consumer based groups in ARTIS activities, such as sponsoring and coordinating public awareness activities and training programs.

A fifth technique involves encouraging the participation of persons with disabilities and their families to be regional technology specialists, and to actively recruit persons with disabilities for the ARTIS staff positions.

A final technique involves providing programmatic support (e.g., sign interpreters) and financial support for persons with disabilities and their families to participate in the annual Technology Access Conference. Funds have been allocated to provide reimbursements for registration fees, travel, accommodations, attendant services, child care, and other expenses related to attending the meeting.

Inter-Agency/Organization Coordination

In addition to the full participation of consumers in the ARTAP planning process, it was recognized that a wide range of agencies and organizations must work cooperatively in order for ARTAP to succeed. This recognition is reflected in the cooperative planning that began with the development of Project TAARK in 1988 (Appendix A). ARTIS will continue in this tradition of interagency/organization cooperation and collaboration as it is recognized that the only way that ARTIS will succeed is through the joint support of consumers and their families and the groups and agencies established to serve them. Cooperative arrangements have been established with four organizations (see Appendix I). The first is Advocacy Services, Inc., this consumer-responsive organization will assist in designing and implementing training materials and activities as they apply to individual advocacy and communicating effectively with persons who have disabilities and their families. The second organization is the Arkansas Technology Resource Center, this consumer-based organization will assist ARTIS in gathering information and answering technical questions through the AppleLink network. The Association for Retarded Citizens/Arkansas will assist ARTIS to communicate with the public by publishing articles in their newsletter; ARC/Ark will cooperate in the development of informational materials; they will assist in barrier awareness activities; and they will provide venues for training and information dissemination (e.g., ARC/Ark Annual Conference and chapter meetings). The University of Arkansas-University Affiliated Programs will assist ARTIS through information dissemination and assisting in developing and implementing training activities.

As part of Project TAARK planning activities, a contract was developed with the Arkansas Highway and Transportation Department to gather information about the transportation needs of persons with disabilities. This relationship enabled information of value to both TAARK and the Highway Department to be obtained and shared. Due to this cooperative working relationship, the Highway Department subsidized a significant portion of the costs for the statewide

survey. Discussions have been held with AHTD officials regarding ARTIS participation in their driver training program for paratransit drivers across the state. ARTIS will participate in this program by proving information about technology and individual needs related to technology.

Due to the time when this proposal was written (i.e., the Christmas Holidays) it was not possible to secure all letters of agreement from all of the groups that was desired. These letters and working arrangements will be completed upon award of the grant. The TAARK Project established excellent inter-agency working relationships and it is intended that these relationships will be continued and expanded.

Plans For Continuation of ARTIS

As reflected in its name, the Arkansas Technology Information System is designed to be an ongoing program to improve technology access, not a limited duration project. A variety of mechanisms have been built into ARTIS in order to achieve this goal. These include: the development of long-term cooperative relationships between and among consumers and professionals; the establishment of commitments to support the program from state level policy makers; the use and expansion of existing resources whenever possible instead of creating expensive new "brick and mortar" projects; the development of effective yet low cost monitoring and evaluation mechanisms; the implementation of extensive training programs for consumers and professionals that emphasize the role of advocacy in technology access; the implementation of a statewide public awareness campaign; the development of local rather than centralized networks of technology specialists throughout the state; the creation of low cost mechanisms for obtaining needed devices, such as the Equipment Exchange Program; and, the development of proven low cost technology support systems for persons with disabilities and their families.

ARTIS's technology information system is designed to serve as the model for a comprehensive human services information and referral system in Arkansas. Such a system has received support from the Arkansas Legislature and has been discussed by many groups over the past five years. ARTIS will be the first implementation of such a system in Arkansas. The information system will be designed in a modular manner so that additions and modifications can be easily made. Preliminary discussions have been held with representatives from the Interagency Coordinating Council for Early Intervention about the expansion of ARTIS to cover disseminating information about early childhood services. Following the proven success of the ARTIS system, participation and support from other state agency groups will be elicited. Support from the state legislature will be sought to support the system. Several states, most notably South Carolina, provide public support for information systems. Support will also be sought from the UA-UAP. Several UAPs across the country, such the Utah and Iowa UAPs, support programs similar to ARTIS. Support will also be sought from other private (e.g., endowments) and public sources. Dr. VanBiervliet has been very successful in securing funding for programs concerning persons with disabilities and their families.

Appendix A

Technology Access for Arkansans (TAARK)

Think People...
Think Technology.

Funded by the Arkansas Governor's Developmental Disabilities Planning Council, the University of Arkansas at Little Rock, and The Univerity of Arkansas-University Affiliated Program.

Abstract of Technology Access for Arkansans (TAARK) Project

For further information contact:
Alan VanBiervliet, Ph.D.
Center for Research on Teaching and Learning
University of Arkansas at Little Rock
Little Rock, AR 72204
(501) 569-3423

Abstract of Technology Access for Arkansans (TAARK) Project

Introduction

Prior to the passage of P.L. 100-407, a cooperative grant development effort was initiated by six public and private agencies in Arkansas to address the technology needs of persons with disabilities. Via a 1-year grant through the Arkansas Governor's Developmental Disabilities Planning Council and the University of Arkansas-University Affiliated Programs in Developmental Disabilities, the Technology Access for Arkansans (TAARK) Project was funded as a result of these early planning activities . The groups which were involved in the development of the grant included the University of Arkansas-University Affiliated Programs; University of Arkansas at Little Rock; Department of Human Services (DHS), Division of Rehabilitation Services; Association for Retarded Citizens/Arkansas; Arkansas Special Education Resource Center; Arkansas Children's Hospital-UAMS; and Arkansas Easter Seal Society.

Conceptual model. TAARK was designed to: (a) identify the need and quality of technology provisions in Arkansas, (b) disseminate information about appropriate technology and funding, (c) educate Arkansans about technology and advocacy, (d) develop a coordinated state plan for technology , and (e) provide technical assistance to the Developmental Disabilities Planning Council. In order to address each of the aforementioned goal areas, particularly with regard to development of a comprehensive state plan, a model was needed which would maximize the use of existing personnel and resources, as well as to insure the input of both consumers and professionals from various service delivery systems.

The TAARK model was based on a systems model developed by the West Virginia Rehabilitation Research and Training Center (1977), referred to as the Institute on Rehabilitation Issues (IRI) process. This process is actually a microsystem of a general model described by Havelock (1974), and has been critiqued by several earlier investgators (see Human Interaction Research Institute, 1976; Jolly, 1975). In the IRI paradigm, the publication of rehabilitation issues was the end product of the process, whereas, in the latter, the development of a comprehensive service delivery system was of paramount importance. The IRI process emphasizes the collective input of persons from many different agencies and programs so as to provide a wide range of perspectives, coupled with the use of study groups to examine issue areas and report to a planning committee. The process is essentially comprised of 14 activities which is depicted in Figure 1. The adaptation of this model which was utilized for state technology planning by the TAARK project is shown in Figure 2.

The receipt of a grant award for TAARK was important in that it provided the fiscal underpinning for extensive state technology planning efforts that ensued. In early November 1988, a Technology Steering Committee representing the six state, private, and consumer agencies and groups that developed the TAARK grant proposal, was organized and provided with information relevant to Public Law 100-407, the objectives of TAARK, and timelines for proposed

activities. Since the federal legislation emphasized *both* consumer involvement and interagency cooperation and planning, the Technology Steering Committee decided to convene a larger planning group that would consist of individuals with disabilities, their families or representatives, representatives of state and private agencies, vendors, and other individuals as deemed appropriate.

Coordinated Planning Committee. A Coordinated Planning Committee was established on January 4, 1989, at a meeting which was jointly convened by TAARK and the DHS Division of Rehabilitation Services . This Planning Committee was the second phase of the adapted IRI model used by TAARK. The major thrust of the Coordinated Planning Committee was to develop a state plan for a consumer responsive statewide system of technology-related assistance, and to develop a grant application in response to P.L. 100-407.

Since only 3 of the 15 participants in the first meeting were individuals with disabilities, parents of children with disabilities or their representatives, the participants were requested to nominate at least two individuals with disabilities or parents to serve on the committee. At the next meeting, 10 (46%) of the 22 participants were individuals with disabilities, parents of children with disabilities, or their representatives. During this meeting, 6 study groups were organized to facilitate the acquisition of information relevant to TAARK project goals. As can be seen in Figure 1, the use of a prime study group in the IRI model activities was of major importance. In the TAARK model, six study groups were used, *each* being assigned a prime task for study. These study groups included Consumer Needs, Information Dissemination and Public Awareness, Legislation and Administrative Policies, National Service Delivery Models, Personnel Issues, and Funding Issues (see Figure 2), and were chaired by the representatives of the 6 organizations constituting Project TAARK. Each of these groups met independently from January until March to collect information relevant to the issue area targeted by the study group, identify barriers to technology access in Arkansas, and to develop solutions to the barriers. As in the IRI model, each study group was charged with the development of a written document identifying problems and suggested solutions to those problems for its respective issue area. The TAARK Project Director was present at each of these study group meetings to facilitate the process and disseminate information regarding the activities and findings of other study groups.

The Coordinated Planning Committee was made up of 48 persons, who represented 25 public and private agencies. The committee met 7 times between January and July of 1989, and all meetings were well-attended with an average of 24 persons participating in each meeting. Nineteen (40%) of the members were persons with disabilities, parents of children with disabilities, or their representatives. Twelve (25%) of the participants were representatives of private non-profit organizations. Three (6%) individuals represented private businesses, such as assistive device vendors. Fourteen (29%) of the participants were employees of 12 state agencies. A few of the participants are counted twice in these figures, *e.g.*, 4 state agency employees were also persons with disabilities or parents of children with disabilities.

Early TAARK activities. A large part of the early meetings of the Coordinated Planning Committee was devoted to technology awareness and information sharing activities. National experts were hired to provide information on alternative approaches towards developing a statewide system of technology access, and to facilitate the planning process. On March 13, a Planning Conference was held for all study groups to ensure coordinated planning activities and to share information regarding forthcoming tasks. On March 22-23, a 2-day retreat was held at DeGray State Park Lodge to begin development of the grant application for P.L. 100-407. At this conference, verbal reports were given by each study group regarding their findings in their designated issue areas. Similar to the activities of the IRI model wherein a draft document was critiqued at an annual meeting of the entire IRI group, suggestions and recommendations from the entire Coordinated Planning Committee with regard to these oral study group reports were presented at the TAARK retreat.

Written reports were subsequently submitted and compiled as a document, *Proceedings from the DeGray Lodge Retreat*, that was made available to all Coordinated Planning Committee members as well as the public on request. This document incorporated all suggestions that were made by the entire Planning Committee at the DeGray Lodge Retreat. Four additional meetings of the Coordinated Planning Committee were held prior to the drafting of the state grant proposal, affording all participants with the opportunity to have input into its development. It is readily apparent how these activities parallel the first 8-9 activities of the IRI model (see Figure 1).

Throughout the TAARK planning activities, the involvement of individuals with disabilities, their families or representatives, and persons from the private sector were actively encouraged and facilitated. Inherent in the initial grant award was a budgetary allotment for stipends to support involvement of individuals with disabilities and their families at all planning meetings. As an example, prior to the March 22-23 meeting of the Coordinated Planning Committee held at DeGray Lodge, advance announcements were sent to all members indicating that stipend support would be provided in the form of babysitting and/or attendant reimbursement, as well as reimbursement for meals, lodging, and transportation. Individuals having access to a reimbursement mechanism via state or private agency were encouraged to utilize those resources. It was anticipated that such support would more readily facilitate the participation of consumers and parents who might have home responsibilities that typically inhibit such participation. It was found that this support did encourage participation, as 9 consumers, parents, and representatives (27%) constituted the makeup of the retreat meeting.

Consumer Committee. At the May 10, 1989, meeting of the Coordinated Planning Committee, a decision was made to establish a group of individuals with disabilities and parents of children with disabilities selected from the Coordinated Planning Committee to establish priorities for the Arkansas grant application for P.L. 100-407. This aspect of the TAARK planning process represented a unique conceptual divergence from the IRI model, as well as most known state planning models given the primary decision-making roles palyed by consumers in the design of a

state technology plan.

The Consumer Committee which was charged with the task of identifying priorities for the state plan reflected a constituency of persons representing a variety of interest groups: a chairperson with a visual impairment who also heads a independent living center that is funded under TitleVII Part B; a parent of a child with cerebral palsy who is on the Governor's Committee for Employment of the Handicapped; a parent of a multihandicapped child who also is active on a state level as a parent advocate; a parent of a deaf/blind child who is also the Chair of the Governor's Deaf/Blind Task Force; a person with learning disabilities who also serves on the National Learning Disabilities Advisory Board; a person with blindness employed as an executive with AT&T who is on a 2-year loan to the President's Committee for Employment for the Handicapped and serves on the Governor's Committee for Employment of the Handicapped; and an elderly person representing the aging population as a member of the Governor's Advisory Council on Aging. Initial data analyses of an extensive consumer survey (Department of Human Services, Division of Rehabilitation Services, 1989; VanBiervliet & Parette, 1989) were shared with the committee to assist it in its efforts to establish priorities.

The Consumer Committee met on numerous occasions in an effort to both prioritize technology goals for the proposed grant application, as well as to offer recommendations pertaining to methodologies for attaining those goals. The recommendations of this committee were presented to the Coordinated Planning Committee at its meeting on May 24. Subsequent meetings focused on methodological decision-making processes to deal with the priorities established by the Consumer Committee. A representative of the Consumer Committee was present at meetings of the Technology Steering Committee held on June 8 and June 14 to ensure that the integrity of their priorities and recommendations was maintained in the development of state plan methodologies.

Again, it should be reiterated that at all meetings of the Coordinated Planning Committee, subsequent to the organizational meeting on January 4, 1989, an average of 38% of participants were persons with disabilities or parents of persons with disabilities. This statistic supports the strong commitment in this planning process to facilitate maximum participation by persons with disabilities and their families in the design of a comprehensive technology state plan.

Consumer and professional needs survey. Consumer input was encouraged from across the state via the mechanism of a Consumer Survey designed to assess needs of users, or potential users of technology. The format for the survey instrument included multiple choice questions on specific technology-relevant issues, and open-ended items allowing consumers to express their unique needs and to offer suggestions for those involved in the state planning processes. These suggestions were systematically recorded and compiled for the review of those establishing priorities for the state plan as well as those designing methodologies for the implementation of those priorities. In addition to the Consumer Survey, efforts were made during the information gathering phase of Project TAARK to secure the input of professionals via surveys

from across the state regarding their views on technology-related needs. Reports of these surveys are currently being disseminated via professional journals, and a copy of the full study has been submitted to a national information database, making it accessible to persons worldwide.

Interagency coordination in planning. From the outset of the state technology planning activities, interagency participation on a broad level has been encouraged and facilitated. Involvement increased from the six initial members constituting Project TAARK to 51 persons representing 25 public and private groups/agencies, as well as persons with disabilities and their families.

One particular unique approach was undertaken to involve a cadre of individuals in TAARK activities during the state planning phase of the project. It was discovered in February 1989 that the Arkansas State Highway and Transportation Department was preparing to undertake an extensive survey to determine the transportation needs of citizens with special needs across the state as a component of its 5-year planning activities. TAARK personnel cultivated a collaborative working relationship with the Planning Division of this state agency. This relationship enabled information of value to both TAARK and the Highway Department to be obtained and shared. Due to this cooperative working relationship, the Highway Department subsidized a significant portion of the costs for a statewide survey of persons with disabilities which was conducted prior to this grant submission. A written report pertaining to this collaborative study was published and made available to the public on request.

Goal attainment. TAARK personnel have successfully facilitated the attainment of a majority of the project goals that were identified in the initial grant proposal. In many respects, the project has realized products that were beyond the scope of the grant, which has contributed immeasurably to state planning activities, with a resulting impact on enhanced levels of technology service provision in Arkansas.

Current activities. With the funding of the Arkansas Technology Program (ARTAP) under P.L. 100-407, the TAARK Project will remain actively involved in state technology planning activities. Inherent in the ARTAP grant proposal was the specific identification of the TAARK Study Groups as an input mechanism into the full implementation of ARTAP. Presently, a 6-month extension of TAARK has been granted by the Governor's Developmental Disabilities Planning Council in order to facilitate the accomplishment of goals which were not fully achieved during the initial 1-year funding cycle. Activities which will be focused on during this continuaton period include: 1) the publishing and dissemination of a consumer guide relating to technology issues in Arkansas; 2) the development and dissemination of a technology curriculum at various various of service delivery statewide; and 3) the development of an electronic bulletin board accessible to persons across the state.

References

Havelock, R. G. (1974). *Ideal systems for research utilization: Four alternatives*. Washington,

DC: Social and Rehabilitation Services, U.S. Department of Health, Education, and Welfare.

Human Interaction Research Institute. (1976). *Putting knowledge to use: A distillation of the literature regarding knowledge transfer and change.* Los Angeles: Author.

Jolly, J. A. (1975). *Technology transfer in research and development.* Monterey, CA: Naval Postgraduate School.

West Virginia Rehabilitation Research and Training Center. (1977). *Utilization of publications of the Institute on Rehabilitation Issues.....1977.* Morgantown, W.VA: Author.

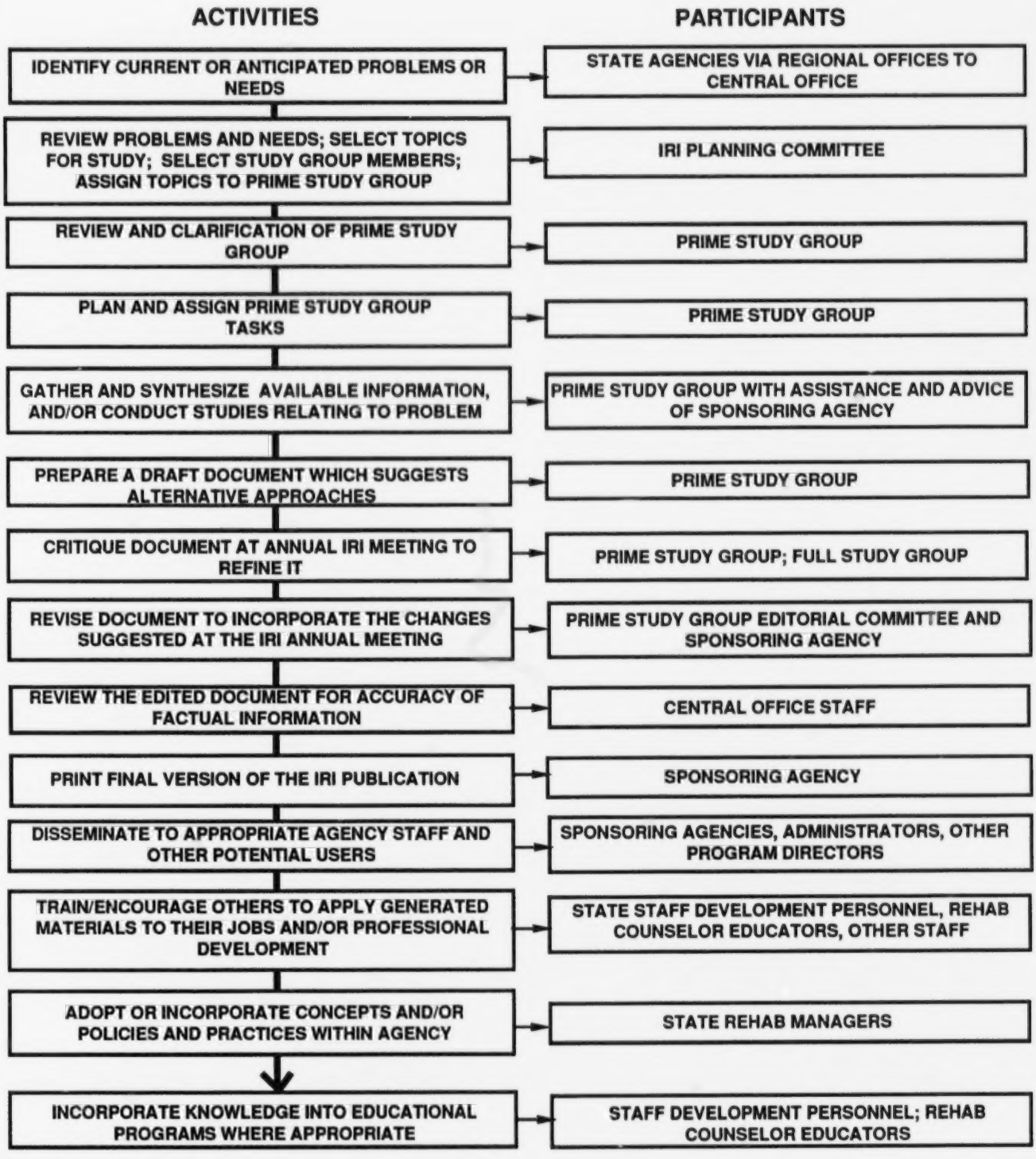

ACTIVITIES
PARTICIPANTS
IDENTIFY CURRENT OR ANTICIPATED PROBLEMS OR NEEDS
STATE AGENCIES VIA REGIONAL OFFICES TO CENTRAL OFFICE
REVIEW PROBLEMS AND NEEDS; SELECT TOPICS FOR STUDY; SELECT STUDY GROUP MEMBERS; ASSIGN TOPICS TO PRIME STUDY GROUP
IRI PLANNING COMMITTEE
REVIEW AND CLARIFICATION OF PRIME STUDY GROUP
PRIME STUDY GROUP
PLAN AND ASSIGN PRIME STUDY GROUP TASKS
PRIME STUDY GROUP
GATHER AND SYNTHESIZE AVAILABLE INFORMATION, AND/OR CONDUCT STUDIES RELATING TO PROBLEM
PRIME STUDY GROUP WITH ASSISTANCE AND ADVICE OF SPONSORING AGENCY
PREPARE A DRAFT DOCUMENT WHICH SUGGESTS ALTERNATIVE APPROACHES
PRIME STUDY GROUP
CRITIQUE DOCUMENT AT ANNUAL IRI MEETING TO REFINE IT
PRIME STUDY GROUP; FULL STUDY GROUP
REVISE DOCUMENT TO INCORPORATE THE CHANGES SUGGESTED AT THE IRI ANNUAL MEETING
PRIME STUDY GROUP EDITORIAL COMMITTEE AND SPONSORING AGENCY
REVIEW THE EDITED DOCUMENT FOR ACCURACY OF FACTUAL INFORMATION
CENTRAL OFFICE STAFF
PRINT FINAL VERSION OF THE IRI PUBLICATION
SPONSORING AGENCY
DISSEMINATE TO APPROPRIATE AGENCY STAFF AND OTHER POTENTIAL USERS
SPONSORING AGENCIES, ADMINISTRATORS, OTHER PROGRAM DIRECTORS
TRAIN/ENCOURAGE OTHERS TO APPLY GENERATED MATERIALS TO THEIR JOBS AND/OR PROFESSIONAL DEVELOPMENT
STATE STAFF DEVELOPMENT PERSONNEL, REHAB COUNSELOR EDUCATORS, OTHER STAFF
ADOPT OR INCORPORATE CONCEPTS AND/OR POLICIES AND PRACTICES WITHIN AGENCY
STATE REHAB MANAGERS
INCORPORATE KNOWLEDGE INTO EDUCATIONAL PROGRAMS WHERE APPROPRIATE
STAFF DEVELOPMENT PERSONNEL; REHAB COUNSELOR EDUCATORS

Figure 1. IRI process upon which TAARK was conceptualized.

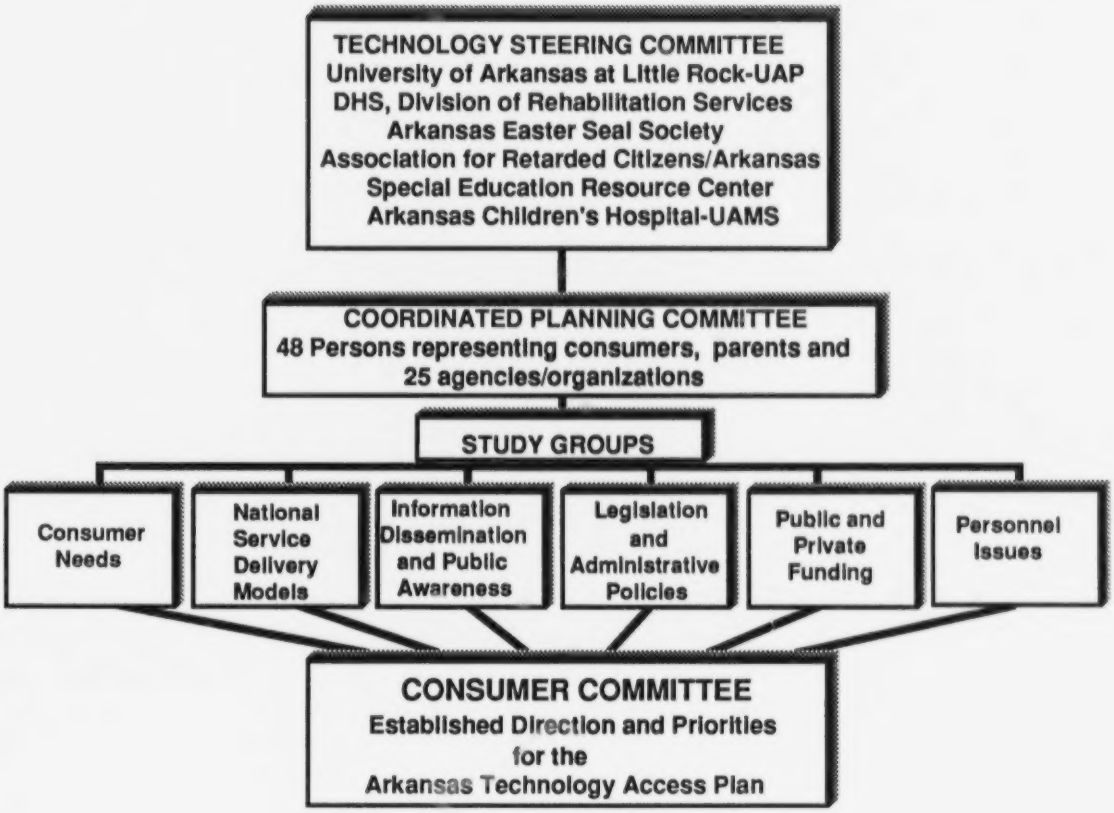


Figure 2. TAARK planning process.

Appendix B

Work Task Timelines

ARKANSAS TECHNOLOGY ACCESS PROGRAM ACTIVITY TIMELINE

Activity	Personnel	Starting Dates	Ending Dates
GOAL 1			
Objective 1.1			
Hire Technology Specialists	Program Director, Dr. VanBiervliet, ARTIS Advisory Committee	2/15/90	3/31/90
Training of ARTIS Personnel	DRS, Program Director, Public & Private Agencies/Organizations	2/23/90	8/1/90
Objective 1.2			
Dissemination of ARTIS to Technology Access Centers	Program Director, Information Specialists	7/1/90	9/1/90
Develop Training Notebook for Regional Technology Specialists	Marketing Specialist, Information Specialist (Coordinator of Regional Technology Specialists)	6/1/91	7/15/91
Disseminate Training Notebook to Regional Technology Specialists	Information Specialist, (Coordinator of Regional Technology Specialists)	7/15/91	9/15/91
Evaluate ARTIS	Program Director	7/1/90	Ongoing
GOAL 2			
Objective 2.1			
Hire Marketing Specialist	DRS	10/1/89	2/15/90
Development of Plan	Marketing Specialist, Marketing Firm, Community Organizations, ARTAP & ARTIS Advisory Council	2/15/90	4/11/90
Develop Marketing Materials	Marketing Specialist	2/15/90	Ongoing
Review of Marketing Materials	ARTIS & ARTAP Advisory Council, Consumer Groups	7/15/90	8/1/90
Objective 2.2			
Implement Marketing Plan	Program Director, Marketing Specialist, Information Specialists	8/1/90	Ongoing
Production of Materials	Marketing Specialist	2/15/90	Ongoing
Dissemination of Materials	Marketing Specialist	3/1/90	Ongoing

Activity	Personnel	Starting Dates	Ending Dates
Objective 2.3			
Evaluate Effectiveness of Marketing Campaign	DHS, Program Director	9/13/90	Ongoing
GOAL 3			
Objective 3.1			
Identify Training Needs and Mechanisms	Program Director, TAARK Study Groups, Information Specialist, TAC Personnel, Regional Technology Specialists	2/15/90	4/1/90
Objective 3.2			
Conduct Training Activities	Program Director, Information Specialist, TAC Personnel, Public & Private Agencies, Regional Technology Specialists	4/1/90	Ongoing
Objective 3.3			
Coordinate Training Activities	Program Director, Information Specialist, TAC Personnel, Public & Private Agencies, Regional Technology Specialists	4/1/90	Ongoing
Objective 3.4			
Develop and Implement System of Training	Program Director, Information Specialist	2/15/90	Ongoing
Objective 3.5			
Evaluate Training Program	Program Director, Information Specialist	2/15/90	Ongoing
GOAL 4			
Objective 4.1			
Create Statewide Registry of Equipment	ARTIS Advisory Council, Marketing Specialist, Information Specialist	2/15/90	Ongoing
Objective 4.2			
Evaluate Equipment Exchange Program	Program Director, TAC Host Organization Executive Directors, Regional Technology Specialists	2/15/90	Ongoing
GOAL 5			
Objective 5.1			
Establish Interagency Council	Governor, DRS, Program Director	6/15/90	8/15/90
Objective 5.2			
Evaluate Effectiveness of Interagency Activities	ARTAP Advisory Council, Program Director	8/15/90	Ongoing

Activity	Personnel	Starting Dates	Ending Dates
GOAL 6			
Objective 6.1			
Develop Regional Technology Teams	Marketing Specialist	10/1/90	6/91
Provide Training and Technical Assistance to Regions	Program Director, Information Specialist, TAC Personnel	1/91	3/91
Evaluate Network of Regional Technology Specialists	Program Director, Information Specialist	10/1/90	Ongoing
GOAL 7			
Objective 7.1			
Identify Participants to Participate in a User-to-User Network	Marketing Specialist, TAC Personnel	2/15/90	10/90
Disseminate Information Relating to User-to-User to TACs and Regional Technology Specialists	Information Specialists, Marketing Specialist	5/1/90	Ongoing
Evaluate User-to-User Network	Program Director, Information Specialist, Regional Technology Specialists	5/1/90	Ongoing

Appendix C

Personnel Job Descriptions and Responsibilities

ARTIS Job Descriptions

ARTIS will be staffed by 6 individuals consisting of a Program Director, three Information Specialists, an administrative assistant, and a Marketing Specialist. An organizational chart reflecting the ARTIS staff personnel and their responsibilities is presented below.

The **Program Director** will be a staff position with the Division of Rehabilitation Services. The direct link with the lead agency for the project will insure efficient interagency communication and facilitate agency supervision of the Director's work performance. The Directors tasks will include grant supervision, supervision of ARTIS staff and activities, fiscal management of the ARTIS, coordinate the Advisory Council, coordinate the TAC's, and coordinate the evaluation of ARTAP. The Director's TAC coordination responsibilities will mainly consist of monitoring grant-related activities and assisting in maintaining effective lines of communication between the TAC's. The Director and all other positions associated with the ARTIS will be located at the host organization for the TIS.

The three **Information Specialists** will assume unique yet related functions in the ARTIS. Two Information Specialists will be grant-funded positions, and the third will be funded by the Division of Rehabilitation Services. All of the Information Specialists will be responsible for responding to information requests that arrive via phone, letter, or in person. The information that they provide will be in a medium (e.g., voice, Braille, TDD, print, or video) that is appropriate for the person making the request. This will involve using existing electronic bulletin boards and databases, using the database system created for Arkansas (see the following Arkansas Database Development section), and using the print and video materials stored throughout the information network. All Information Specialists will be responsible for compiling technology-related information that would be entered into the ARTIS for dissemination. The Specialists will assume primary responsibility for maintenance of computer files and print/audio/video materials within the ARTIS.

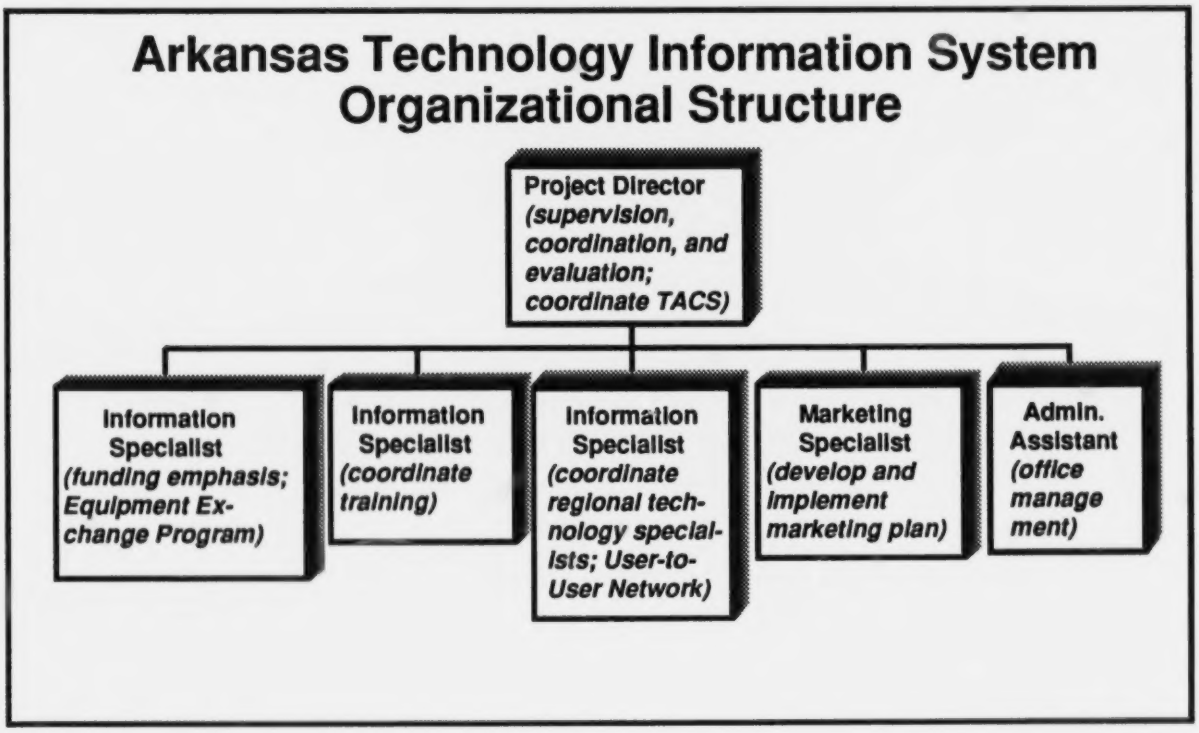
One Information Specialist will have specific expertise in funding mechanisms for assistive technology and related services. The Specialist will assist in gathering and disseminating information about funding polices, practices, barriers, and solutions in Arkansas and across the country. The Specialist will also coordinate the Funding and Policies Study Group and work closely with the Interagency Council on funding and policy issues. Collaborative work on policy change regarding insurance and other forms of third party payment will be a crucial component of this individuals job responsibilities. This person will also be responsible for coordinating the Equipment Exchange Program

A second Information Specialist will serve as the Training Coordinator. The Training Coordinator will assist in targeting technology training needs throughout the state, organize the

resources necessary to meet the needs, and coordinate the evaluation of the effectiveness of training activities. This Specialist will work closely with the Technology Access Centers to accomplish these tasks. Based on identified training needs and upon requests for training, the Training Coordinator will match the expertise of persons within Arkansas and nationally to training needs. A database of course instructors will be maintained to assist in this task. The Training Coordinator will assist the TACs in achieving their training goals by assisting in organizing training programs. The Training Coordinator will also be responsible for organizing the yearly Arkansas Technology Access Conference and programs at appropriate meetings and conferences throughout Arkansas. In addition, the Training Coordinator will be responsible for developing and implementing systematic procedures for evaluating all training activities.

The third Information Specialist will be responsible for the coordination of the Regional Technology Specialist Program and the User-to-User Network. Both of these tasks consist of statewide community-based outreach and expansion of the service network. For the Regional Technology Specialist Program, the Information Specialist will identify participants in all regions of the state, identify training needs of the participants, assist in conducting preservice and inservice training, develop a manual of procedures and guidelines, assist in providing technical assistance, coordinate fiscal management of the program, assist in marketing the program, and coordinate the evaluation of the program. The User-to-User Network is principally a volunteer organization of consumers who use technology and who are willing to share their experiences with other consumers who are contemplating buying or otherwise using the same or similar technology. The Information Specialist will assist in marketing the program, assist in identifying participants in all regions of the state, assist in conducting orientation and training of participants, assist in developing and maintaining a record keeping system, develop a manual of procedures and guidelines, coordinate fiscal management of the program, troubleshoot as problems arise, and coordinate the evaluation of the program.

The **Marketing Specialist** will be assigned to developing marketing strategies relating to technology applications with persons having disabilities. Such strategies will be designed to impact upon the awareness of all Arkansans through a variety of media including print materials, production of audio and visual media presentations, newspaper and newsletter layouts, and other mechanisms for information dissemination. The Marketing Specialist will work closely with the ARTIS and ARTAP Advisory Committees, Program Director, the Information Specialists, and the Training Specialist in the development of marketing strategies and also serve as a resource person for resolving problems relating to public awareness which are reported to occur in the various regions of the state. An administrative assistant will be employed to assist in data collection and storage, record keeping, maintaining training and financial records, producing reports, and daily clerical activities in the operation of ARTIS.


Arkansas Technology Information System
Organizational Structure
Project Director
(supervision, coordination, and evaluation; coordinate TACS)
Information Specialist
(funding emphasis; Equipment Exchange Program)
Information Specialist
(coordinate training)
Information Specialist
(coordinate regional technology specialists; User-to-User Network)
Marketing Specialist
(develop and implement marketing plan)
Admin. Assistant
(office management)

Appendix D

Consumer and Professional Technology Surveys

Summary of Consumer and Professional Survey Findings

Background

In the Spring of 1988, prior to the passage of Public Law 100-407, the Technology-Related Assistance for Persons with Disabilities Act of 1988, a cooperative effort to find solutions to problems experienced by Arkansans with developmental disabilities was initiated by seven public, private, and consumer agencies. The resulting project, the Technology Access for Arkansans (TAARK) project was designed to: (a) identify the need and quality of technology provisions in Arkansas; (b) to disseminate information about the appropriate technology and funding; (c) to educate Arkansans about technology and funding; (d) to educate Arkansans about technology and advocacy; (e) to develop a coordinated state plan; and (f) to provide technical assistance to the Governor's Developmental Disabilities Planning Council (DDPC). The project was funded in part through the DDPC and in part through the University of Arkansas-University Affiliated Program. Soon after this project was funded at the state level, the federal technology legislation was enacted in August of 1988 providing the impetus for bi-level planning activity that included the development of a broad state plan addressing the technology needs of persons with disabilities, and preparing a proposal in response to P.L. 100-407.

These processes culminated in a grant award under the federal legislation to establish a comprehensive statewide system of technology-related assistance for persons with disabilities. To a large extent, the development of this grant proposal was contingent upon information obtained from a comprehensive needs assessment of persons with disabilities across the state.

Contained herein are the results of the statewide assessment of the technology needs of persons with disabilities of all age groups and across various disability categories in Arkansas. The estimated number of Arkansans having disabilities statewide is reflected in Table 1. Additionally, the technology-related needs of professionals across disciplines who are involved in service delivery to persons with disabilities has been examined.

Method

In January of 1989, invitations to particpate on a Coordinated Planning Committee were extended across the state by the participating members of the TAARK project. Responses were obtained from 17 individuals representing a cadre of state, private, and consumer organizations in Arkansas who convened and discussed components of Public Law 100-407. Given that little information appeared to exist relating to the technology needs of persons with disabilities, a decision was made by the Coordinated Planning Committee to conduct surveys of both consumer and professional audiences in the state to gain information for planning efforts. A Consumer Needs Study Group was organized to draft documents designed to assess the technology-related needs of persons with disabilities, as well as to identify needs for training among professionals involved in service provision to persons with disabilities. The resulting instruments were subjected to a series of reviews and modifications by the entire Coordinated Planning Committee which, by May of 1989, had grown to a constituency of 48 individuals including persons with disabilities, family members, vendors of technology, and representatives of 25 different public and

private organizations (VanBiervliet & Parette, 19890.

Consumer survey. Each of the participating members of the Central Planning Committee was requested to provide a mailing list of persons with disabilities and/or consumers . Groups which participated by providing mailing lists included: Advocacy Services, Arkansas Association for the Hearing Impaired, Arkansas Easter Seal Society, Central Arkansas Area Agency on Aging, Coalition for the Handicapped, Department of Human Services (DHS) Developmental Disabilities Services, DHS Division of Rehabilitation Services, DHS Division of Services for the Blind, and Mainstream Living Center, which is an independent living center funded through Title VII Part B. Approximately 12,000 mailing labels were submitted for use in the consumer survey, constituting a sample of a wide range of consumers representing many disability categories. In order to address the elderly population of the state--a significant component of the Arkansas population base (Division of Demographic Research, 1988)--contact was made with publication headquarters for *Arkansas Aging*, a periodical of the DHS Division of Aging and Adult Services and the Arkansas Association of Area Agencies on Aging, and consent was obtained to reproduce the Consumer Survey instrument in its newspaper. This publication has a circulation of approximately 35,000 within the State of Arkansas. Consent was also obtained to reproduce the Consumer Survey in *ARC news,* a monthly newsletter disseminated by the Association for Retarded Citizens/Arkansas which has a circulation of approximately 4,000. These periodicals, as well as the mailing lists provided by the many participating agencies and organizations, reflected the potential to reach approximately 52,000 Arkansans.

Return envelopes were included in the mailout of 12,000 survey instruments though no return envelopes were included in the published versions of the survey in the aforementioned newsletters. It was recognized from the outset that this strategy would significantly affect return rates from the readership of these newsletters, yet project budgetary constraints prohibited the use of return envelopes with such a volume of mailouts. Surveys were mailed during the first week of April of 1989. A poor response rate from the elderly consumer audience having access to the survey form published in *Aging Arkansas* was indicated following the initial mailout. To insure that the elderly sector of the state was adequately represented in the survey, a second mailout of 1,200 instruments using return envelopes and which were mailed to six Area Agencies on Aging was conducted in June of 1989.

Professional survey. Each participating group of the TAARK Coordinated Planning Committee was also requested to provide a mailing list of professionals involved in service delivery to persons with disabilities in their respective agency. In some instances, contacts were made with agencies/groups not directly involved in the planning activity, *e.g.*, state occupational therapy, physical therapy, social work organizations, and copies of mailing labels secured. This process resulted in the names and addresses of 2,200 professionals across the state being identified for use in the survey from a cadre of agencies and organizations. Since the TAARK project was cooperating with the Arkansas Highway and Transportation Department (AHTD) in its 5-year planning activities, surveys were also sent to all recipients of transportation funds received

from the AHTD.

A draft version of the Survey of Professionals instrument was prepared by the Consumer Needs Study Group and, as with the Consumer Survey, was reviewed and modified on numerous occasions by the entire Planning Committee. The final version was printed and mailed in mid-April of 1989. Return envelopes were included in each instrument to facilitate return by recipients of the survey.

Inter-data entry reliability. Data from returns were entered on computer by four project staff personnel. All records were entered on a PANORAMA (ProVUE Development Corporation, 1988) database. This computer program provided a screen simulation of each survey instrument that was visible to data entry personnel. Data entry reliability was determined by examining a random sample of 10% of the returned consumer and professional survey forms and comparing actual data entered on computer to that exhibited on the survey forms. Since data were entered in a visible screen section, or window, relating to the actual survey instrument, an error rate ranging from only 0 to 5% for various items occurred. Most errors occured on items requiring the data entry staff to interpret open-ended or fill-in-the-blank responses, *e.g.*, name and address.

Consumer Survey Results

Demographics. A total of 2201 consumer survey forms were received. This reflects a return rate of approximately 20% of the survey forms which were mailed that included return envelopes. Surveys which were disseminated via the mechanism of *Aging Arkansas* and *ARC News* were not included in data analysis due to the poor response rate that resulted perhaps due to not using return envelopes. Only 28 responses were obtained using these two periodicals as vehicles for survey dissemination.

Examination of the survey responses indicated that consumers from all counties in the state returned survey instruments, and that the return rates from these counties typically mirrored population densities of these counties. Also, all age groups were represented among the survey repondents. Self reports of disability category by participants in the survey reflected a wide range of disabilities: physical handicaps (46%); visual impairments (41%); learning disabilities (35%); speech impairments (32%); mental retardation (31%); hearing impairments (26%); heart problems (16%); breathing problems (13%); emotional problems (12%); head injuries (6%); and other disabilities (17%).

Levels of satisfaction. Table 2 reports levels of satisfaction experienced by consumer survey respondents. A majority of respondents reported that they participated in an assessment or evaluation prior to obtaining their assistive devices/services, though a relatively large proportion reported not having had an assessment or evaluation. Similarly, a large percentage of respondents reported that they were satisfied with the services they received for their assistive devices, though more than one-third of the total respondent class reported that they were unsatisfied. With regard to the need for more information pertaining to assistive devices/services, half of the respondents indicated such a need. This need for information was supported by the high number of unmet needs reported in all categories of assistive devices/services (see Table 3).

In the area of equipment purchasing practices, it is noted in Table 2 that over 1/5 of the respondents expressed having had the opportunity to purchase assistive devices on a "buy-on-time", or credit plan, and more than 1/2 reported that such a plan would be helpful to assist them in purchasing needed devices. A large number of respondents reported that they did not receive adequate training in the use of their devices, and almost 1/2 reported that they did not have an opportunity to try out devices before being required to pay for them. A moderate number of respondents voiced dissatisfaction with the length of time required for the servicing of their devices when they were in need of repair. Interestingly, for those respondents who appeared to be employed (n = 436), almost 3/4 of the respondent class indicated that *no* attempt to change the environment was made.

Areas of technology usage and unmet needs. Technology usage was reported in all areas of life functioning by the consumer respondents participating in the survey. As noted in Table 3, the areas in which technology was most often used as reported by the respondents was *getting around* , followed by *self-help* , *things that help you see* , and *taking care of the home*. Unmet needs were also reported in all areas of life functioning. In some of these unmet needs categories (*work and work training; school training; talking with others; reading, writing, and typing; recreation; hearing aids and other devices; using a computer; building accessibility;* and *specialized cars, vans, and buses*) consumers reported unmet needs more often than usage.

Expenditures for assistive technology. Consumers were asked to report their expenditures for devices, services, and/or maintenance during 1988. More than 1/4 of the respondents reported expending less than $100 for technology devices and services. Expenditures of between $100 and $500 were reported by a smaller number of respondents. Larger expenditures for technology were reported less frequently, with a relatively small percentage indicating personal costs exceeding $500. Almost 1/4 of the consumer respondents reported lack of knowledge of expenditures for assistive technology in 1988.

Funding sources. Funding sources for assistive devices/services which were reported for those respondents participating in the survey included a wide range of mechanisms, though several funding sources appeared to predominate usage by consumers. The largest funding sources for assistive devices/services reported for the total consumer class were Medicare/Medicaid (42%), the consumer and/or their family (30%), Department of Human Services (DHS) Division of Rehabiltation Services (19%), and DHS Division of Developmental Disabilities Services (11%). Interestingly, *only 3% of the respondents reported having their assistive technology funded through the public school systems*.

Travel practices. In the area of travel practices reported by consumers, a large percentage of respondents reported that no travel was involved in order to receive assistive devices/services, though approximately 1/3 of these respondents (n = 161) were age 65 and above. More than 1/4 of the respondents reported traveling 1-20 miles to receive their assistive devices/services, while a small group of consumers reported they had to travel 21-50 miles to receive such services. Almost 1/4 of the respondents reported having to travel over 50 miles to

receive assistive devices/services.

Professional Survey Results

Demographics. A total of 458 completed professional survey forms were received as of August 10, 1989, reflecting a return rate approximately 21%. Responses were received from professionals who worked with individuals representing all age ranges and disability categories. Age groups which were reported being served by the respondents included infants (19%), preschoolers (31%), school-age children (57%), transition age (16-21) individuals, adults aged 22-59 (46%), and adults aged 60 and above (31%). Disability groups which were served by the professional respondents included the following categories: speech impairments (62%), mental retardation (61%), hearing impairments (58%), learning disabilities (54%), visual impairments (53%), orthopedic impairments (46%), behavior disorders (42%), multidisabilities (42%), cardiac/coronary impairments (28%), respiratory impairments (26%), and other disabilities (16%). Responses were also received from professionals who worked in all regions of the state. Professionals representing the following disciplines submitted responses: administrators (41%); counselors (25%); educators (18%); therapists (18%); advocates (11%); vocational personnel (5%); group home/ residential workers (2%); physicians/nurses (1%); and other (14%). Some of these respondents reported dual roles of service provision to persons having disabilities.

Need for information. The need for information on services and devices that was reflected in the consumer survey was also supported by the findings from the survey of professionals. In Table 4, it is reported that professionals needed additional information in all areas of technology and related services. Client usage of technology services were reported by professionals in all identified areas. The five major areas in which technology information needs were reported by the professional respondents included: *computers*, *work site modifications* , *assistive listening devices*, *communication aids*, and *recreation.*

Training needs. Over 67% of the respondents reported that they received insufficient training in college regarding technology and its applications with persons with disabilities. Table 5 reports the areas of deficiency identified by the respondents. The following training topics were ranked as greatest need by the respondents: *matching needs of persons with disabilities to technology*, *conducting assessments and evaluations*, *how technology can increase vocational options*, *legislation and funding*, *computers*, and *clinical/practicum experiences*. When asked about the preferred mechanism for receiving training regarding technology and technology-related assistance, a majority of professionals reported preferences for *inservice training* (69%), and *local workshops/conferences* (64%). Less preferred strategies included *regional workshops/ conferences* (39%), *state workshops/conferences* (38%), *videotapes* (36%), *newsletters* (21%), *coursework* (12%), and *telecourses* (7%).

Perceptions of consumer purchasing needs. In order to determine how professionals perceived the needs of consumers with regard to purchasing needed technology/services, they were asked whether or not their clients would benefit from a "buy-on-time" or credit plan. Though most respondents (49%) reported that clients would not

benefit from such an option, 34% did report that this alternative to purchasing technology and related services would be useful.

Use of volunteers. Given that the use of volunteers is one widely accepted form of service delivery in various systems of the helping professions, professional survey participants were asked if they felt that volunteers trained in the use of technology/services for persons with disabilities would be useful. Most respondents (70%) did not feel that trained volunteers would be useful, though 20% of the participants reported in the affirmative to this question.

Agencies/mechanisms providing services. The professional survey respondents identified a cadre of agencies andmechanisms which provided technology funding to their clients. The primary sources of services, support, and aid identified were *Medicaid* (66%), *public schools* (53%), *DHS Division of Rehabilitation Services* (53%), *Medicare* (41%), and *private insurance* (40%).

Priorities for a state plan. The principle purpose for conducting the survey of professionals as well as that of consumers was to gain information that would assist in the development of a comprehensive state technology plan. Table 6 reports ratings by professional survey respondents relative to activities that were deemed to be of importance in a state technology plan. Interestingly, of those activities perceived to be *very important, early identification of persons with disabilities* was viewed by the majority of the respondents as being a priority. This was followed by *provision for the ongoing evaluation of needs*; *identification and coordination of policies, resources, and services*; *provision and payment for technology and services*; and *dissemination of information to the public on assistance and sources of funding*. The only activity not rated as being very important by at least 50% of the survey respondents was the development of *locally governed organizations to provide technology-related services*.

Team participation. Each of the professional respondents was asked to report whether they participated on a team with other professionals to providing technology to persons with disabilities. The sample was divided in this respect, with 42% responding that they did participate in such team processes while the majority (50%) indicated that they did not participate on a team. When asked to identify the types of persons needed to participate on a team, some clear patterns emerged with regard to the relative importance of certain types of professionals. Some professionals which were consistently identified by a large proportion of the respondents included speech therapists (46%), psychologists or psychological examiners (46%), occupational therapists (45%), counselors/case managers (43%), parents (43%), and physical therapists (42%). Other types of persons viewed as being needed on a team when providing technology to persons with disabilities included physicians and nurses (38%), rehabilitation counselors (35%), educators (35%), audiologists (30%), and administrators (29%). Advocates and engineers/technicians were seen as being least important with 25% of the respondents respectively identifying these two types of team members.

Table 1

Estimated Number of Persons With Disabilities by Type of Disability: All Chronic Activity Limitations, and Percentages of Persons With Limited Activity or Inability to Perform Major Life Activities[a], and Unable to Perform Major Activities[b]

Main Causes of Limitation	All Ages			Under 18			18 - 44			45 - 69			70+		
Categorical Disabilities:	n	%[a]	%[b]	n	%[a]	%[b]	n	%[a]	%[b]	n	%[a]	%[b]	n	%[a]	%[b]
Mental Retardation	31,127	(.74)	(.37)	13,928	(.48)	(.30)	13,426	(.94)	(.42)	3,462	(.94)	(.42)	311	(.95)	(.04)
Autism	452	(.67)	(.32)	174	(.88)	(.32)	204	(.53)	(.32)	69	(.54)	(.32)	5	(.06)	(.04)
Cerebral Palsy	1,906	(.55)	(.38)	966	(.54)	(.38)	718	(.56)	(.38)	195	(.55)	(.38)	26	(.58)	(.38)
Epilepsy	3,642	(.41)	(.20)	719	(.65)	(.38)	2,005	(.35)	(.15)	741	(.35)	(.15)	177	(.36)	(.15)
Other Disabilities:															
Brain Injured	2,215	(100)	(.30)	567	(100)	(.30)	1,239	(100)	(.30)	368	(100)	(.30	40	(100)	(.30)
Spina Bifida	359	(.81)	(.43)	163	(.81)	(.43)	143	(.81)	(.43)	39	(.82)	(.43)	14	(.86)	(.43)
Paralysis	3,686	(.81)	(.43)	256	(.81)	(.43)	1,080	(.81)	(.43)	1,669	(.81)	(.43)	682	(.81)	(.43)
Orthopedic Impairments	54,615	(.66)	(.21)	2,959	(.66)	(.21)	23,248	(.66)	(.21)	21,285	(.66)	(.21)	7,123	(.66)	(.21)
Absence of Limbs	3,875	(.80)	(.42)	197	(.80)	(.42)	946	(.80)	(.42)	1,713	(.80)	(.42)	1,019	(.80)	(.42)
Skin & Musculoskeletal	68,259	(.70)	(.27)	892	(.70)	(.27)	11,584	(.70)	(.27)	36,687	(.70)	(.27)	19,106	(.70)	(.27)
Blind	2,102	(.64)	(.20)	117	(.64)	(.20)	353	(.64)	(.20)	661	(.64)	(.20)	971	(.64)	(.20)
Deaf	1,575	(.64)	(.20)	325	(.64)	(.20)	486	(.64)	(.20)	415	(.64)	(.20)	348	(.64)	(.20)
Digestive Disorders	9,673	(.68)	(.26)	418	(.68)	(.26)	2,193	(.68)	(.26)	5,061	(.68)	(.26)	2,002	(.68)	(.26)
Circulator Disorders	71,864	(.72)	(.35)	1,173	(.72)	(.35)	5,802	(.72)	(.35)	41,399	(.72)	(.35)	23,491	(.72)	(.35)
Respiratory Disorders	33,427	(.70)	(.31)	8,190	(.70)	(.31)	7,391	(.70)	(.31)	11,996	(.70)	(.31)	5,851	(.70)	(.31)
Mental Illness	11,128	(.87)	(.43)	3,776	(.87)	(.43)	3,607	(.87)	(.43)	3,064	(.87)	(.43)	680	(.87)	(.43)
Other Nervous Disorders	7,399	(.77)	(.38)	662	(.77)	(.38)	2,058	(.77)	(.38)	3,112	(.77)	(.38)	1,567	(.77)	(.38)
Other Conditions	23,955	(.73)	(.33)	4,649	(.73)	(.33)	6,380	(.73)	(.33)	9,072	(.73)	(.33)	3,854	(.73)	(.33)
TOTAL	**331,259**			**40,131**			**82,863**			**141,008**			**67,267**		

[a]The percentage of persons in the age and disability category having limited ability or inability to perform major life activities.

[b]The percentage of persons in the age and disability category unable to perform major activities.

Source: Arkansas Legislative Sub-Committee on Definition and Agency Responsibility for the Developmentally Disabled and the Arkansas Governor's Developmental Disabilities Planning Council (1988). An examination of the impact of adopting the federal definition of developmental disabilities in Arkansas. Cambridge: Human Services Research Institute.

TABLE 2

Reports of Satisfaction with Technology Services
Provided to Consumer Survey Respondents
(n = 2201)

Question	n Yes	%*	n No	%*
Were you given an evaluation before getting your assistive device?	1397	.83	296	.17
Are you satisfied with the services you receive for assistive devices you use?	1343	.78	281	.22
Have you received enough training in the use and care of your assistive device?	957	.72	368	28
Are you satisfied with the time it takes to repair/service your device?	807	.72	318	.28
Do you need more information about assistive devices/services that could help you?	1121	.62	699	.38
Were you able to try out the device before paying for it?	660	.54	559	.46
Are transportation services being provided to you?	764	.40	1151	.60
Did you have the opportunity to buy assistive devices/services on a "buy-on-time", or credit plan?	391	.27	1047	.73
If not, would a "buy-on-time", or credit plan help?	647	.56	501	.43
If employed, did your employer change your work area or equipment to meet your needs?	124	.13	312	.32

* Percentages computed on number of respondents answering specific item.

TABLE 3

Areas of Assistive Devices/Services Used and Areas of Unmet Needs as Reported by Consumer Survey Respondents (n = 2201)

Area	n of Use	%*	n of Unmet Need	%*
Getting Around	702	.75	240	.25
Self-Help	626	.67	305	.33
Things That Help You See	407	.58	294	.42
Taking Care of Home	465	.57	350	.43
Artificial Limbs, Braces, & Prostheses	261	.53	228	.47
Specialized Seating	278	.52	254	.48
Using a Telephone	354	.50	352	.50
School Training	315	.49	321	.51
Work & Work Training	317	.49	326	.51
Recreation	379	.49	388	.51
Hearing Aids & Other Hearing Devices	294	.49	306	.51
Talking with Others	297	.47	341	.53
Building Accessibility	314	.45	383	.55
Reading, Writing, & Typing	326	.44	418	.56
Specialized Cars, Vans, & Buses	280	.43	375	.57
Using a Computer	161	.27	436	.73

* Indicates % of total number of respondents.

TABLE 4

Categories of Technology Services Used/Needed by Clients of Professional Survey: Respondents and Areas of Need for More Information by Professionals Survey Respondents
(*n* = 458)

Technology Service Area	No. Professionals Indicating Client Usage or Need (%)*	No. Professionals Needing More Information (%)*
Self-Help	254 (.56)	65 (.14)
Work Site Modifications	171 (.37)	123 (.27)
Mobility	271 (.59)	49 (.11)
Electric/Power Wheelchair & Carts	179 (.39)	54 (.12)
Telephone Usage	198 (.43)	89 (.19)
Recreation	199 (.43)	106 (.23)
Assistive Listening Devices	186 (.41)	110 (.24)
Building Accessibility	235 (.51)	58 (.13)
Specialized Cars, Vans, & Buses	206 (.45)	65 (.14)
Home Management	195 (.43)	81 (.18)
Classroom Adaptations	216 (.47)	95 (.21)
Specialized Seating	190 (.42)	68 (.15)
Communication Aids	230 (.50)	106 (.23)
Reading, Writing, & Typing	203 (.44)	86 (.19)
Aids for the Visually-Impaired	154 (.34)	100 (.22)
Computers	224 (.49)	139 (.30)
Artificial Limbs, Prosthesis & Orthotics	145 (.32)	56 (.12)

* Percentages rounded.

TABLE 5

Area of College Preparation Deficiency Reported by Professional Survey Respondents (n = 458)

Area of Deficiency	n of Respondents	(%)*
Legislation which affects funding/reimbursement patterns for technology needs of persons with disabilities	177	(.39)
How technology can increase vocational options	184	(.40)
Matching needs of persons with disabilities to technology	244	(.53)
Conducting assessment and evaluations	191	(.42)
Clinical/practicum experiences	147	(.32)
Effectively working with other professionals in a team arrangement	85	(.19)
Self-help	122	(.27)
School	95	(.21)
Mobility	98	(.21)
Communication	142	(.31)
Recreation	74	(.16)
Aids for the visually-impaired	72	(.16)
Computers	172	(.38)
Artificial limbs, prostheses, & orthotics	79	(.17)
Home management	101	(.22)
Work & work-training	130	(.28)
Specialized seating	61	(.13)
Telephone usage	62	(.13)
Reading, writing, & typing	89	(.19)
Building accessibility	72	(.16)
Specialized cars, vans & buses	63	(.14)
Assistive listening devices	77	(.17)

* Percentages rounded

TABLE 6

Ratings by Professional Survey Respondents of Priotities to be Established in State Technology System (n = 458)

Activity	RATING: Very Important n (%)*	Somewhat Important n (%)*	Not Important n (%)*
Early identification of persons with disabilities	401 (.88)	19 (.04)	4 (.01)
Providing ongoing evaluation of needs	316 (.69)	104 (.23)	2 (>.01)
Identification and coordination of policies, resources, and services	310 (.68)	107 (.23)	4 (.01)
Provision and payment for technology and services	308 (.67)	107 (.23)	7 (.02)
Dissemination of information to the public on assistance and sources of funding	254 (.56)	153 (.33)	11 (.02)
Creating a public awareness program on the effectiveness and availability of technology-related devices and services	237 (.52)	173 (.38)	10 (.02)
Locally governed organizations to provide technology-related services	188 (.41)	191 (.42)	37 (.08)
Establishment or continuation of partnerships and cooperative initiatives between the public and private sectors	228 (.50)	175 (.38)	14 (.03)
Development of qualifications or standards to ensure that qualified persons are providing technology services	249 (.54)	151 (.33)	15 (.03)
Establishment of procedures providing for the active involvement of persons with disabilities, their families, and other interested persons in the implementaiton of a statewide program	251 (.55)	151 (.33)	13 (.03)

* Percentages rounded

CONSUMER SURVEY

Assistive devices are designed to overcome handicaps caused by disabilities. Examples of these devices are wheelchairs, hearing aids, speech aids, and talking alarm clocks. Services for training on how to use and maintain these assistive devices are also important for people who have disabilities.

Please answer the following questions. **If the person with a disability is unable to complete this survey, please complete it for him/her.**

Age of person with disability_____
City in which that person lives_____
County_____ **Zip**_____

1. Type of disability that applies to you or a family member **(please check all that apply)**:

problems with seeing	☐	**problems with speech**	☐
problems with hearing	☐	**mental retardation**	☐
problems with learning	☐	**emotional problems**	☐
physical handicap	☐	**breathing problems**	☐
heart problems	☐	**head injury**	☐

other:_____

2. From what group(s) do you receive assistive devices, services, or information? **(please check all that apply):**

Area Agency on Aging	☐	**Div. of Services for the Blind**	☐
Ark. Children's Hospital	☐	**Home Health Agency**	☐
Ark. Easter Seal Society	☐	**Medicare/Medicaid**	☐
Children's Medical Services	☐	**Private Commercial Services**	☐
Developmental Disabilities Services	☐	**Private Insurance**	☐
		Spinal Cord Commission	☐
Div. of Rehabilitation Services	☐	**United Cerebral Palsy**	☐
		Veterans Administration	☐
Other:_____		**Workers Compensation**	☐

3. Were you given an evaluation before getting your assistive device?
YES ☐ NO ☐

4. Are you satisfied with the services you receive for assistive devices that you use?
YES ☐ NO ☐

5. If employed, did your employer change your work area or equipment to meet your needs?
YES ☐ NO ☐ NO CHANGES NEEDED ☐

6. Do you need more information about assistive devices/services that could help you?
YES ☐ NO ☐

7. Many types of assistive devices/services are available. Please check in **Column 1** if you **use** assistive devices/services in the area listed. Check in **Column 2** if you have an **unmet need** for assistive devices/ services in the area listed. Space is provided for **comments.**

	USE	UNMET NEED	COMMENT
Self-Help Skills (such as eating, dressing, toileting, and bathing):	☐	☐	_____
Taking Care of Your Home (such as cooking food and keeping house):	☐	☐	_____
Work and Work Training Aids:	☐	☐	_____
School Training Aids (such as adapted desks, and learning materials):	☐	☐	_____
Getting Around (such as wheel-chairs, carts, canes, crutches, etc.):	☐	☐	_____
Specialized Seating:	☐	☐	_____
Using a Telephone:	☐	☐	_____
Talking with Others (such as communication aids):	☐	☐	_____
Reading, Writing, and Typing:	☐	☐	_____
Recreation (such as games, sports, toys, and music):	☐	☐	_____
Things That Help You See:	☐	☐	_____
Hearing Aids and Other Hearing Devices:	☐	☐	_____
Using a Computer:	☐	☐	_____
Building Accessibility (such as ramps and adapted bathrooms):	☐	☐	_____
Artificial Limbs, Braces, and Prostheses:	☐	☐	_____
Specialized Cars, Vans, & Buses:	☐	☐	_____

8. About how much did you spend on devices/services/maintenance last year?

less than $100	☐	$100-500	☐
$501-1000	☐	$1001-5000	☐
more than $5000	☐	Don't know	☐

9. The assistive devices/services that I have/get are paid for by **(check those which apply):**

Area Agency on Aging	☐	**Div. of Services for the Blind**	☐
Arkansas Easter Seal Society	☐	**Insurance Company**	☐
Ark. Highway Department	☐	**Medicare/Medicaid**	☐
Ark Spinal Cord Commission	☐	**My Family and/or Me**	☐
CHAMPUS	☐	**Public School**	☐
Children's Hospital	☐	**United Cerebral Palsy**	☐
Children's Medical Services	☐	**Veterans Administration**	☐
Civic/Service Club	☐	**Workers Compensation**	☐
Developmental Disabilities (DDS)	☐	**Don't Know**	☐
Div. of Rehabilitation Services	☐	**Other:**_____	

10. How far did you have to travel to get the assistive devices/services you receive?

None	☐	51-100 miles round trip	☐
1-21 miles round trip	☐	over 100 miles round trip	☐
21-50 miles round trip	☐		

11. Are transportation services being provided to you?

YES ☐ NO ☐

If YES, please name the agency that provides the transportation.

_____

TURN THE PAGE

12. Did you have the opportunity to buy the assistive devices/services on a "buy-on-time", or credit plan?

YES ☐ NO ☐

13. If not, would a "buy-on-time", or credit plan help?

YES ☐ NO ☐

14. Have you received enough training in the use and care of your assistive device?

YES ☐ NO ☐

15. Were you able to try out the device before paying for it?

YES ☐ NO ☐

16. Are you satisfied with the time it takes to repair/service your device?

YES ☐ NO ☐

17. Would you like some follow-up information? If so, put your name and address on the lines provided.

Name_____Address_____
City_____Zip_____Phone_____

18. Do you have any recommendations or suggestions about assistive device services and provisions in Arkansas?

ON COMPLETING THE SURVEY, PLEASE TEAR OFF THE MAILING LABEL AT THE BOTTOM OF THE PAGE AND PUT THE SURVEY FORM IN THE ENCLOSED ENVELOPE AND RETURN. THANK YOU.

TEAR HERE

- - - -

TECHNOLOGY SURVEY OF PROFESSIONALS

Technology has been defined as those **assistive devices** which can affect the functional capabilities of persons of any age with disabilities. Examples of such devices include wheelchairs, augmentative communication aids, hearing aids, computers, and talking alarm clocks. Similarly, technology also includes **services** that enable persons with disabilities to select, acquire, and use assistive devices.

As a professional involved in service delivery to persons with disabilities, please complete the following background information and then respond to the statements listed by checking the appropriate response or by providing the requested information.

Background Information

Agency_____

City_____ **County**_____

Phone_____ **Job Title**_____

1. Please indicate the approximate number of persons your agency serves who have the following disabilities (**estimate annual census**):

visual impairments	_____	**speech impairments**	_____
hearing impairments	_____	**mental retardation**	_____
learning disabilities	_____	**behavior disorders**	_____
orthopedic impairments	_____	**multidisabilities**	_____
cardiac/coronary impairments	_____	**respiratory impairments**	_____

other:_____

2. Please estimate the number of clients you serve within each age group.

infants (0-2)	_____	**transition (16-21)**	_____
preschoolers (3-5)	_____	**adults (22-59)**	_____
school-age (6-21)	_____	**older adults (60+)**	_____

3. In what way/s are you involved with persons with disabilities? (**check the one that best applies to your job**)

advocate	☐	**counselor**	☐	**administrator**	☐
therapist	☐	**educator**	☐	**vocational personnel**	☐
physician/nurse	☐	**group home/ residential**	☐		

other (please specify)_____

4. Listed below are general areas in which technology and related services are used to assist persons with disabilities. Please check those used or needed by your clients. Please check those areas which you feel you need more information/training in order to fully utilize such technology and related services.

	Currently Used or Needed	Need More Information
Self-Help (such as eating, dressing, toileting, & bathing)	☐	☐
Work Site Modifications	☐	☐
Mobility (such as manual wheelchairs, carts, canes, & crutches)	☐	☐
Electric/Power Wheelchairs and Carts	☐	☐
Telephone Usage	☐	☐
Recreation	☐	☐
Assistive Listening Devices	☐	☐
Building Accessibility	☐	☐
Specialized Cars, Vans & Buses	☐	☐
Home Management (such as food preparation & housekeeping)	☐	☐
Classroom Adaptations	☐	☐
Specialized Seating	☐	☐
Communication Aids	☐	☐
Reading, Writing, Typing	☐	☐
Aids for the Visually Impaired	☐	☐
Computers	☐	☐
Artificial Limbs, Prostheses, & Orthotics	☐	☐

5. What agencies are providing services, support, or aid to the consumers with whom you work? **(check all those that apply).**

Area Agency on Aging	☐	**Home Health Agency**	☐
Ark. Children's Hospital	☐	**Medicaid**	☐
Ark. Easter Seal Society	☐	**Medicare**	☐
Ark. Highway Dept.'s (vans & buses)	☐	**Private Donations**	☐
		Private Insurance	☐
Children's Medical Services	☐	**Public School**	☐
Developmental Disabilities Services (DDS)	☐	**Spinal Cord Commission**	☐
		United Cerebral Palsy	☐
Div. of Rehabilitation Services	☐	**Veterans Administration**	☐
		Workers Compensation	☐
Div. of Services for the Blind	☐	**Other (please list)**_____	

6. Would your clients benefit from a "buy-on-time" or credit plan to purchase needed technology/services?

YES ☐ **No** ☐

7. Do you use volunteers who are trained in the use of technology/services for persons with disabilities in your work?

YES ☐ **No** ☐

8. Do you currently participate on a team with other professionals in your area in providing technology to persons with disabilities?

YES ☐ **No** ☐

9. What types of persons are needed to serve on a team with you? **(check all that apply).**

administrator	☐	**occupational therapist**	☐
advocate	☐	**physical therapist**	☐
audiologist	☐	**parent**	☐
counselor/case manager	☐	**physician/nurse**	☐
		psychologist/examiner	☐
engineer/technician	☐	**rehab. counselor**	☐
educator	☐	**speech therapist**	☐

other: _____

10. Please rate the following activities with regard to how important you feel they should be as **priorities** in our state with regard to the technology-related needs of persons with disabilities **(check the appropriate response):**

	ACTIVITY	VERY IMPORTANT	SOMEWHAT IMPORTANT	NOT IMPORTANT
a.	Early identification of persons with disabilities	☐	☐	☐
b.	Providing ongoing evaluation of needs	☐	☐	☐
c.	Identification and coordination of policies, resources, and services	☐	☐	☐
d.	Provision and payment for technology and services	☐	☐	☐
e.	Dissemination of information to the public on assistance and sources of funding	☐	☐	☐
f.	Creating a public awareness program on the effectiveness and availability of technology-related devices and services	☐	☐	☐
g.	Locally governed organizations to provide technology-related services	☐	☐	☐
h.	Establishment or continuation of partnerships and cooperative initiatives between the public and private sectors	☐	☐	☐
i.	Development of qualifications or standards to ensure that qualified persons are providing technology services	☐	☐	☐
j.	Establishment of procedures providing for the active involvement of persons with disabilities, their families, and other interested persons in the implementation of a statewide program	☐	☐	☐

11. Do you feel that you were adequately trained in college to deal with the technology needs of persons with disabilities?

YES ☐ No ☐ Not Applicable ☐

12. If not, in what areas do you feel training should have focused to a greater degree? **(please check all that apply)**

a. legislation which affects funding/reimbursement patterns for technology needs of persons with disabilities..... ☐
b. how technology can increase vocational options..... ☐
c. matching needs of persons with disabilities to technology..... ☐
d. conducting assessments and evaluations..... ☐
e. clinical/practicum experiences..... ☐
f. effectively working with other professionals in a team arrangement..... ☐

g. self-help..... ☐ h. home management..... ☐
i. school..... ☐ j. work & work-training..... ☐
k. mobility..... ☐ l. specialized seating..... ☐
m. communication..... ☐ n. telephone usage..... ☐
o. recreation..... ☐ p. reading, writing, typing.... ☐
q. aids for the visually impaired..... ☐ r. assistive listening devices..... ☐
s. computers..... ☐ t. building accessibility..... ☐
u. artificial limbs, prostheses, & orthotics..... ☐ v. specialized cars, vans, & buses..... ☐

13. How would you prefer to receive training in the area of technology and technology-related assistance for persons with disabilities? **(check those which apply)**

inservice training ☐ local workshop/conference ☐
coursework ☐ regional workshop/conference ☐
telecourses ☐ state workshop/conference ☐
video tapes ☐ other:_____
newsletters ☐ _____

14. Do you or your agency provide transportation for persons who have disabilities?

YES ☐ NO ☐

15. If so, approximately how much do you (your agency) spend annually on these transportation services?_____

16. What are your projected 5-year vehicle replacement needs?

# of cars_____ #of adapted cars_____
# of vans_____ # of adapted vans_____
# of buses_____ # of adapted buses_____
other:_____

17. Do you have any ideas regarding technology for the people/agencies who are currently working on developing a comprehensive state plan? If so, please share them .

_____
_____
_____
_____

18. Are you willing to participate in a follow-up of this survey? If so, please put your name and address in the spaces provided.

Name:_____**Affiliation:**_____
Address:_____
City:_____**Zip:**_____
Phone:_____

PLEASE FOLD THE COMPLETED SURVEY FORM, INSERT IN THE REPLY ENVELOPE PROVIDED, AND RETURN PROMPTLY. IF THERE IS A MAILING LABEL AFFIXED AT THE BOTTOM AND YOU WISH TO REMAIN ANONYMOUS, PLEASE REMOVE LABEL BEFORE INSERTING IN THE ENVELOPE.

IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT:

TECHNOLOGY ACCESS FOR ARKANSANS
CENTER FOR RESEARCH ON TEACHING AND LEARNING
2801 SOUTH UNIVERSITY
LITTLE ROCK, ARKANSAS 72204
(501) 569-3423 VOICE OR TDD

THANK YOU FOR YOUR PARTICIPATION IN THIS IMPORTANT SURVEY.

Technology Access for Arkansans
Center for Research on Teaching & Learning
University of Arkansas at Little Rock
2801 South University
Little Rock, AR 72204

Nonprofit Organization
U.S. POSTAGE PAID
Little Rock, Arkansas
Permit Number 2542

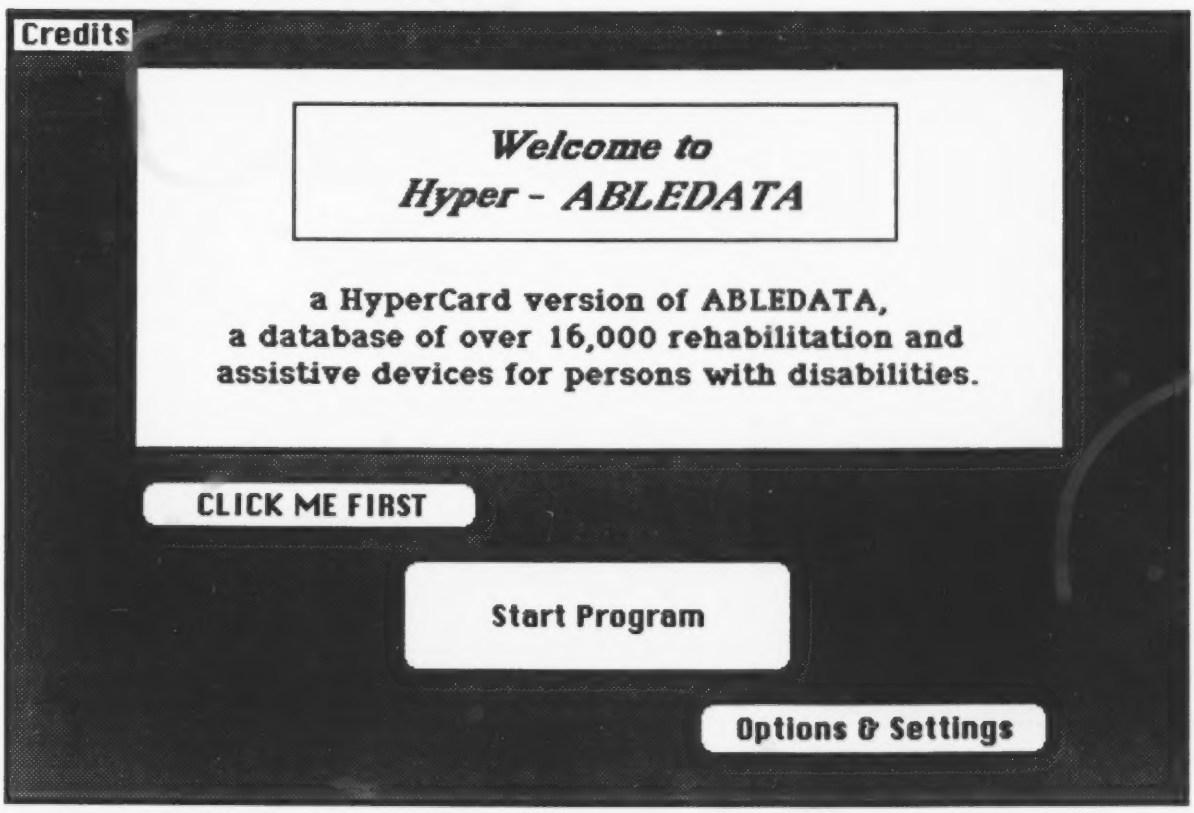
Appendix E

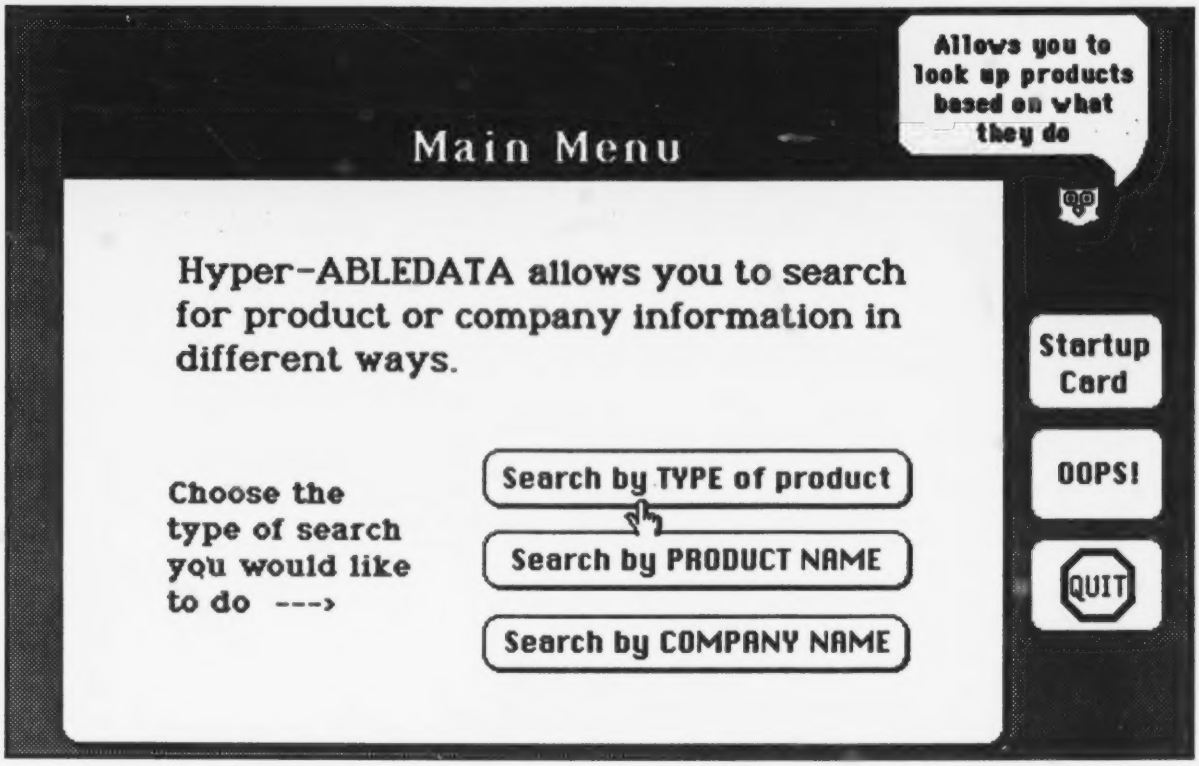
Hyper-ABLEDATA

Hyper-ABLEDATA

Hyper-ABLEDATA is a hypermedia version of ABLEDATA, a database of over 16,000 rehabilitation and assistive devices for persons with disabilities. The Trace R&D Center (University of Wisconsin) used HyperCard to develop this database under a grant from NIDRR. Hyper-ABLEDATA can be freely copied and has been distributed widely across the U.S. It will be upgraded semiannully. Clearly labeled navigation and function buttons makes Hyper-ABLEDATA very easy to learn and to use. Operators click on buttons and words, typing skills are not needed. The database contains textual, pictorial, and auditory information. The system will automatically print custom letters and phone manufacturers. Hyper-ABLEDATA provides an automatic technique for easily collecting corrections and additions to the database, and it has an on screen help system. With the assistance of Dr.VanBiervliet, Hyper-ABLEDATA is currently being used by the Arkansas Technology Resource Center. Hyper-ABLEDATA along with MacIntosh computers are being distributed freely by the PL.100-407 Technical Assistance Project to all grantee states. This program is currently accessible to everyone except persons with severe visual impairments, ARTIS staff under the direction of Dr. VanBiervliet will modify Hyper-ABLEDATA to make it accessible to persons with visual impairments. The following figures illustrate the steps in using Hyper-ABLEDATA and its automatic features.

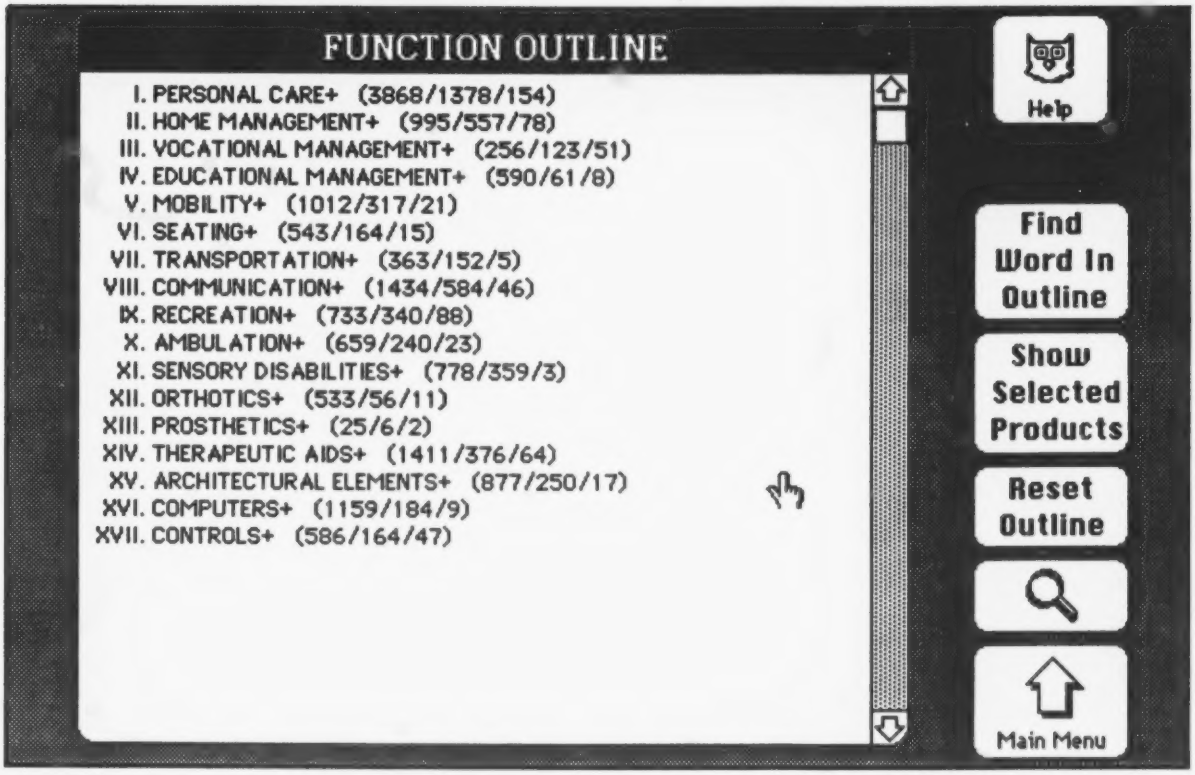
Opening page of Hyper-ABLEDATA

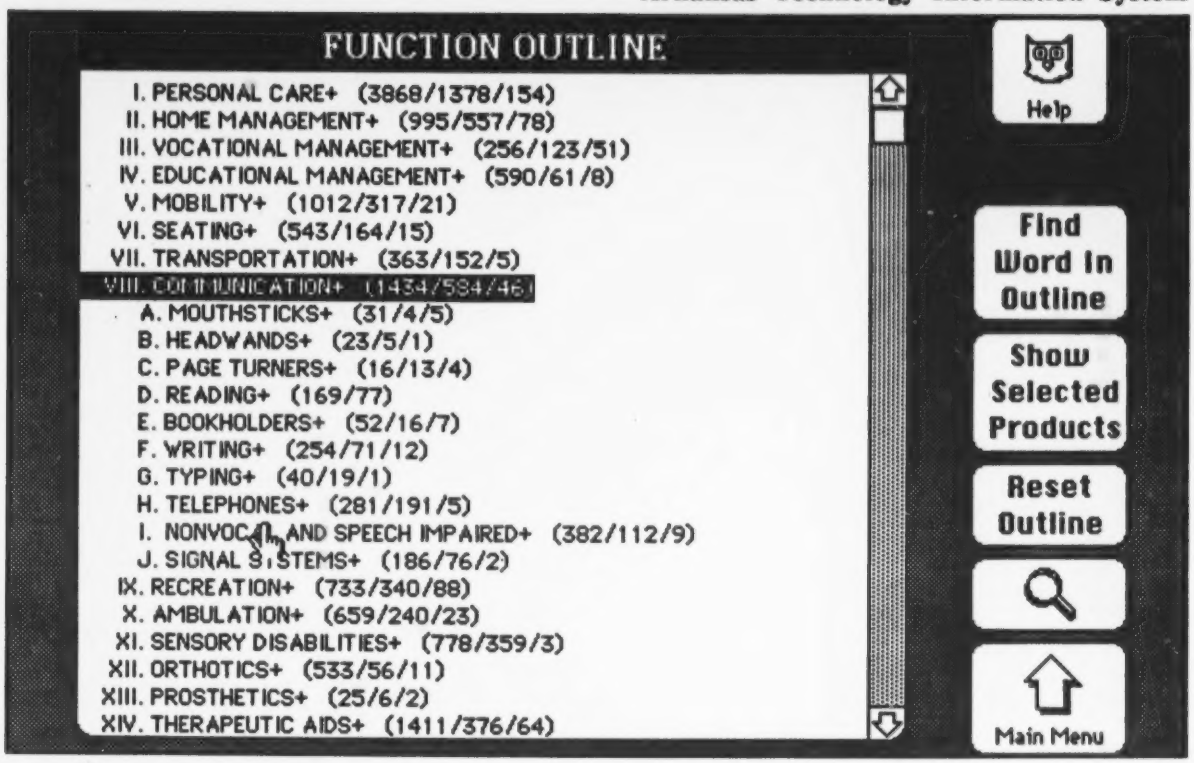



Allows you to look up products based on what they do
Main Menu
Hyper-ABLEDATA allows you to search for product or company information in different ways.
Choose the type of search you would like to do --->
Search by TYPE of product
Search by PRODUCT NAME
Search by COMPANY NAME
Startup Card
OOPS!
QUIT

Select the approach you will use to conduct the search

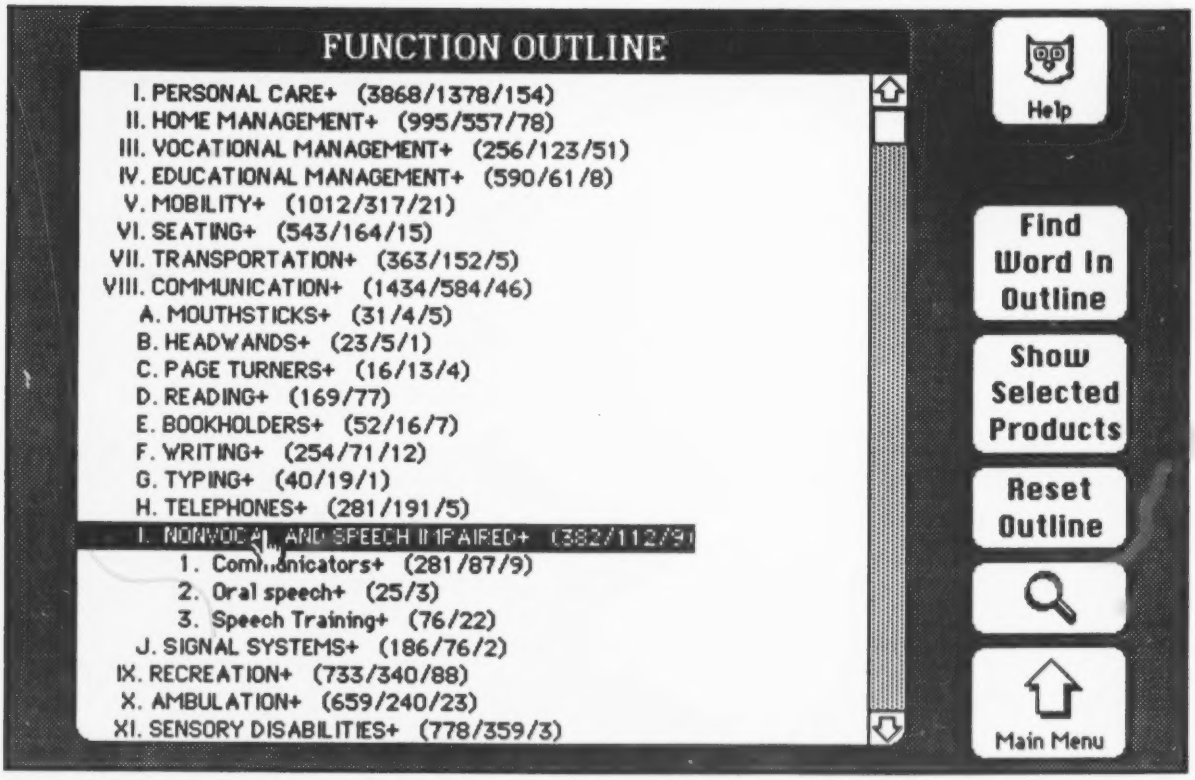
Choose among 17 general categories of assistive devices

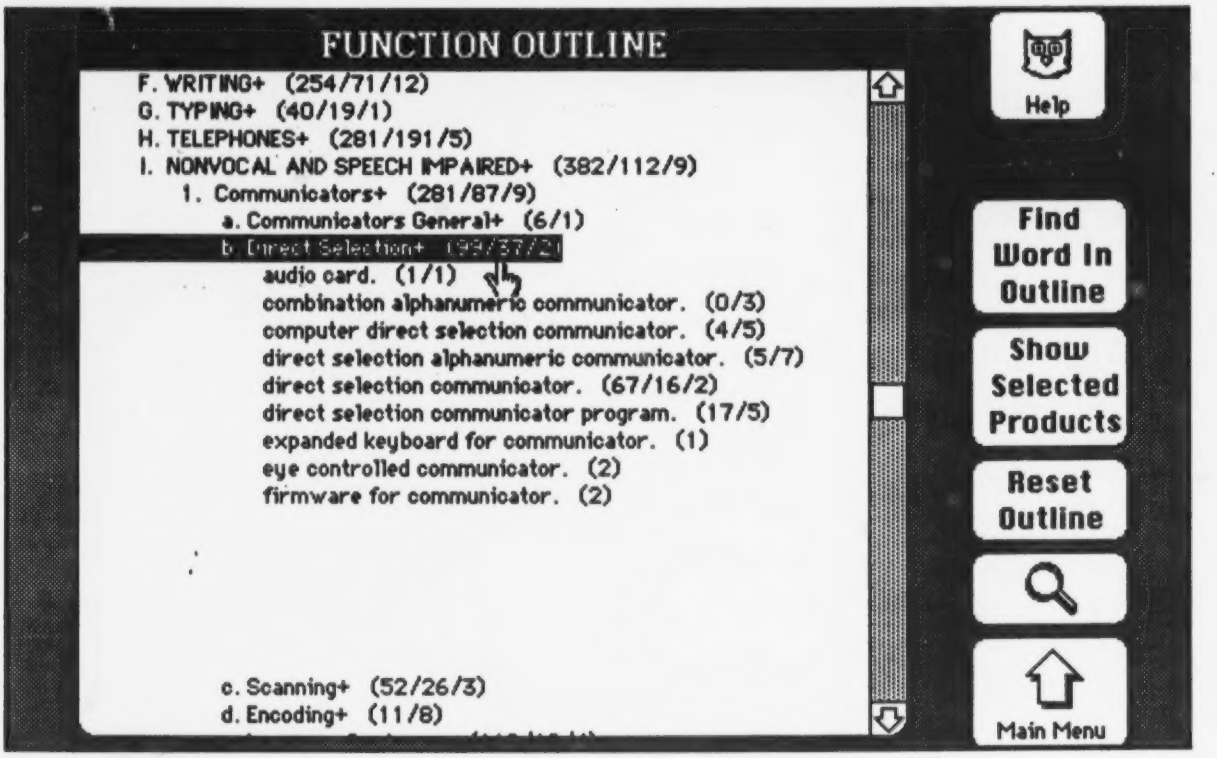




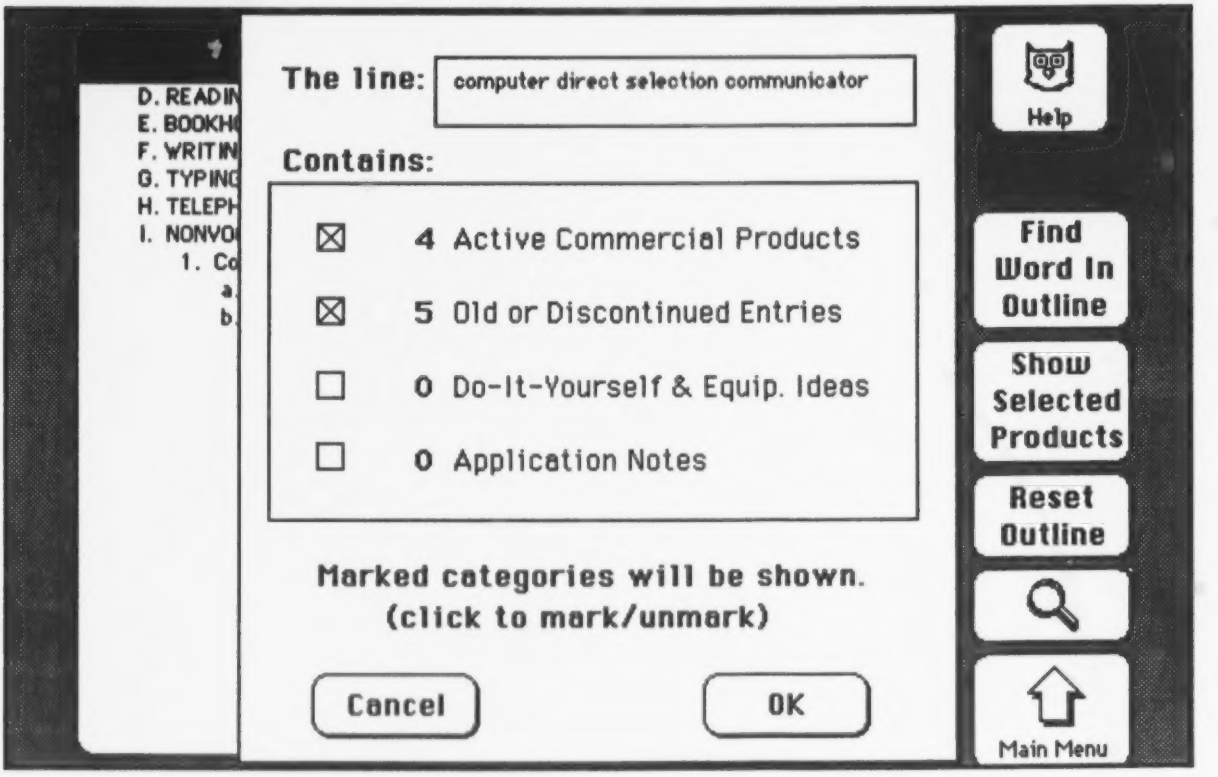
Select a category

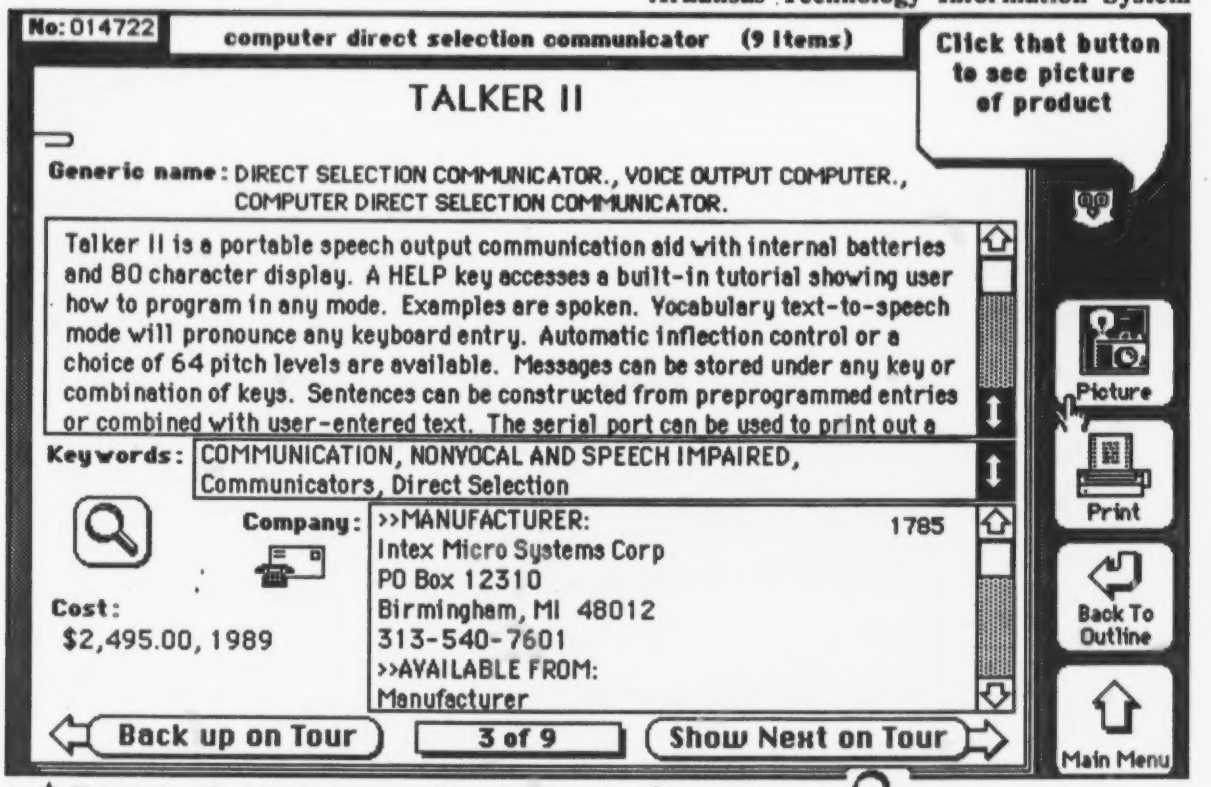
Further narrow search by selecting subcategories





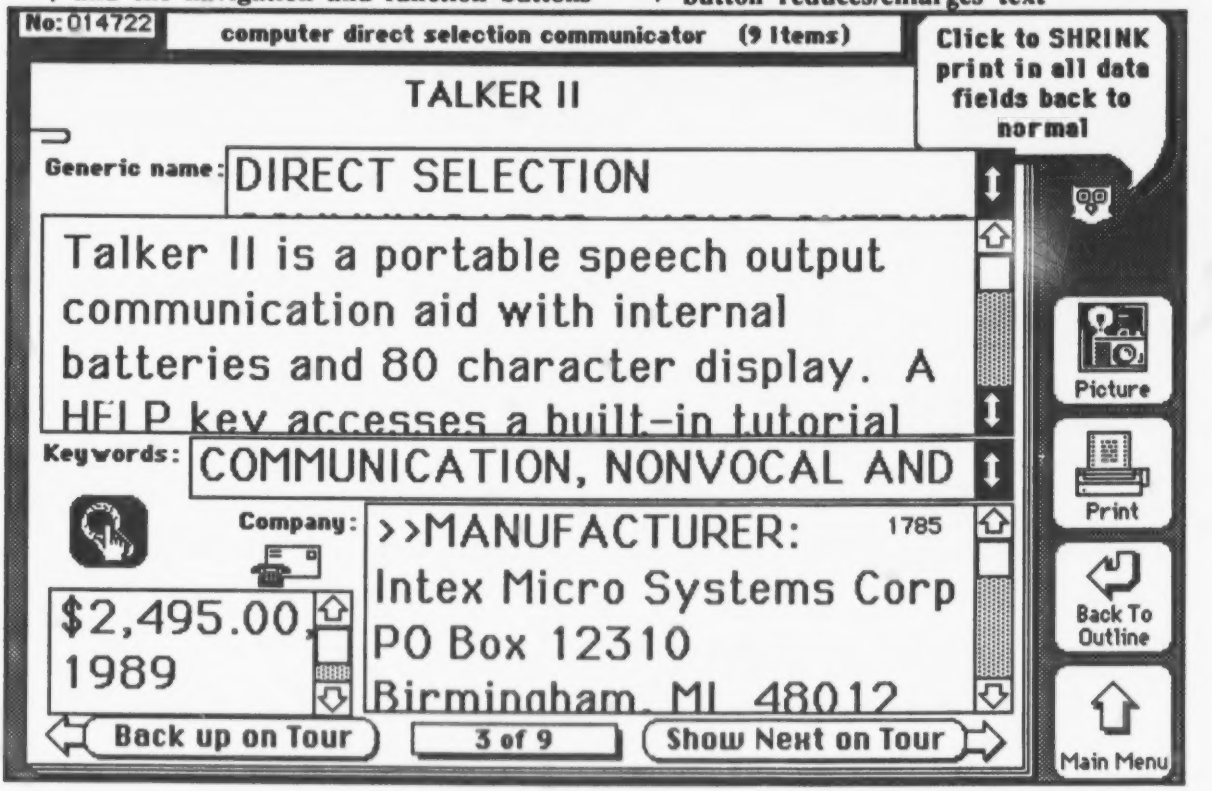
Select subcategories to further restrict the search to the devices you are interested in.

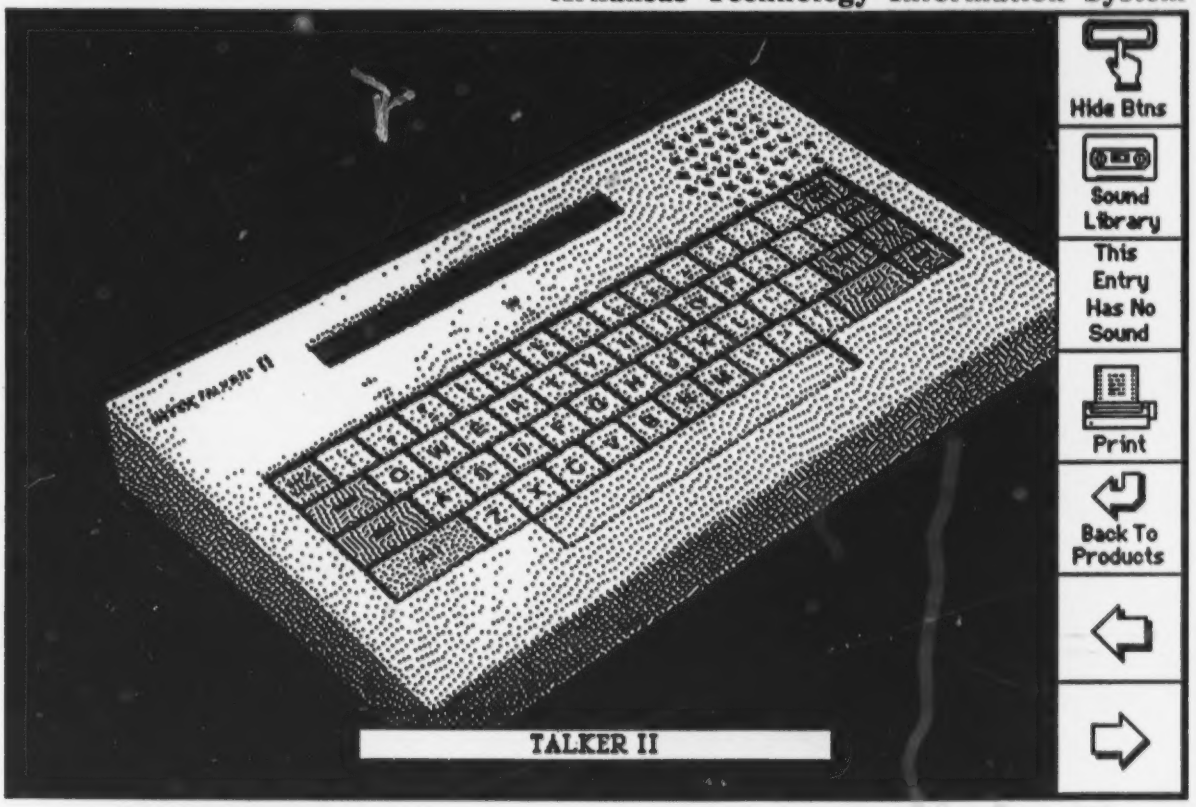



No: 014722
computer direct selection communicator (9 items)
Click that button to see picture of product
TALKER II
Generic name: DIRECT SELECTION COMMUNICATOR., VOICE OUTPUT COMPUTER., COMPUTER DIRECT SELECTION COMMUNICATOR.
Talker II is a portable speech output communication aid with internal batteries and 80 character display. A HELP key accesses a built-in tutorial showing user how to program in any mode. Examples are spoken. Vocabulary text-to-speech mode will pronounce any keyboard entry. Automatic inflection control or a choice of 64 pitch levels are available. Messages can be stored under any key or combination of keys. Sentences can be constructed from preprogrammed entries or combined with user-entered text. The serial port can be used to print out a
Keywords: COMMUNICATION, NONVOCAL AND SPEECH IMPAIRED, Communicators, Direct Selection
Company:
>>MANUFACTURER: 1785
Intex Micro Systems Corp
PO Box 12310
Birmingham, MI 48012
313-540-7601
>>AVAILABLE FROM:
Manufacturer
Cost:
$2,495.00, 1989
Picture
Print
Back To Outline
Main Menu
Back up on Tour
3 of 9
Show Next on Tour

Example of a device's record or card and the navigation and function buttons

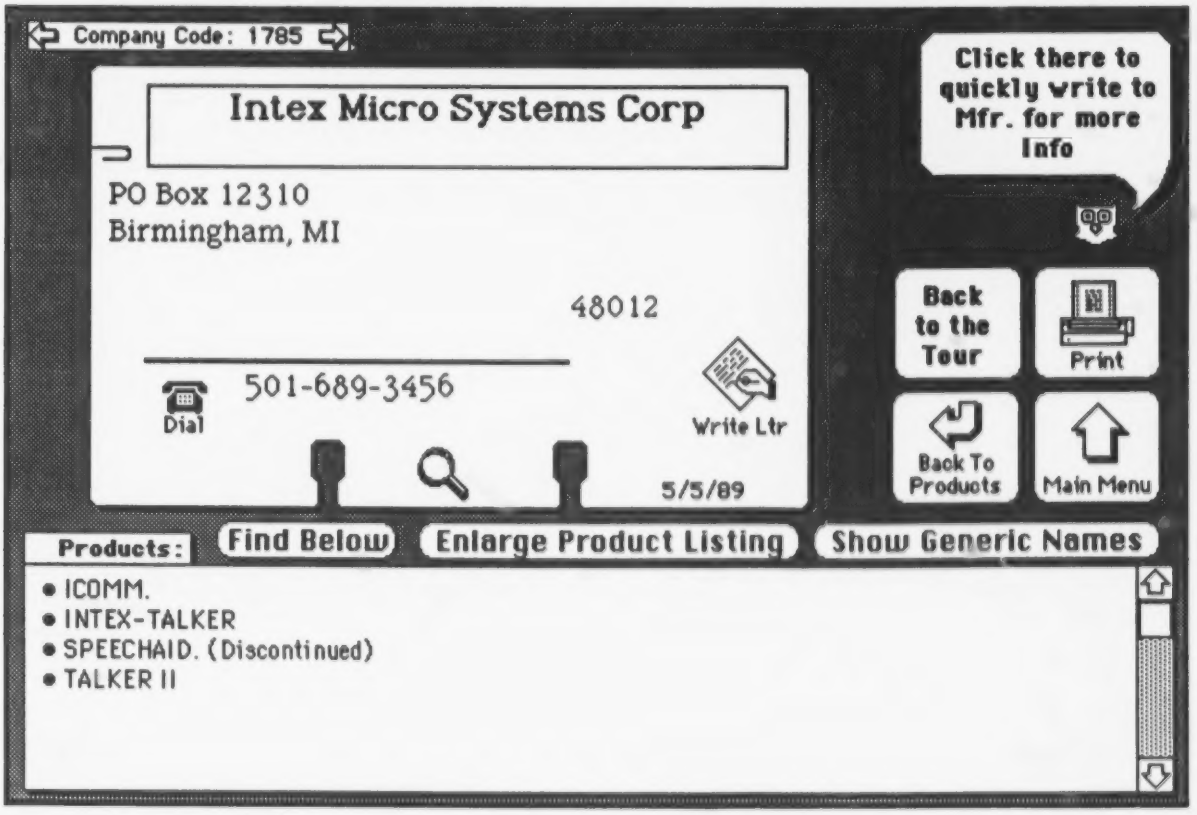
Selecting the button reduces/enlarges text

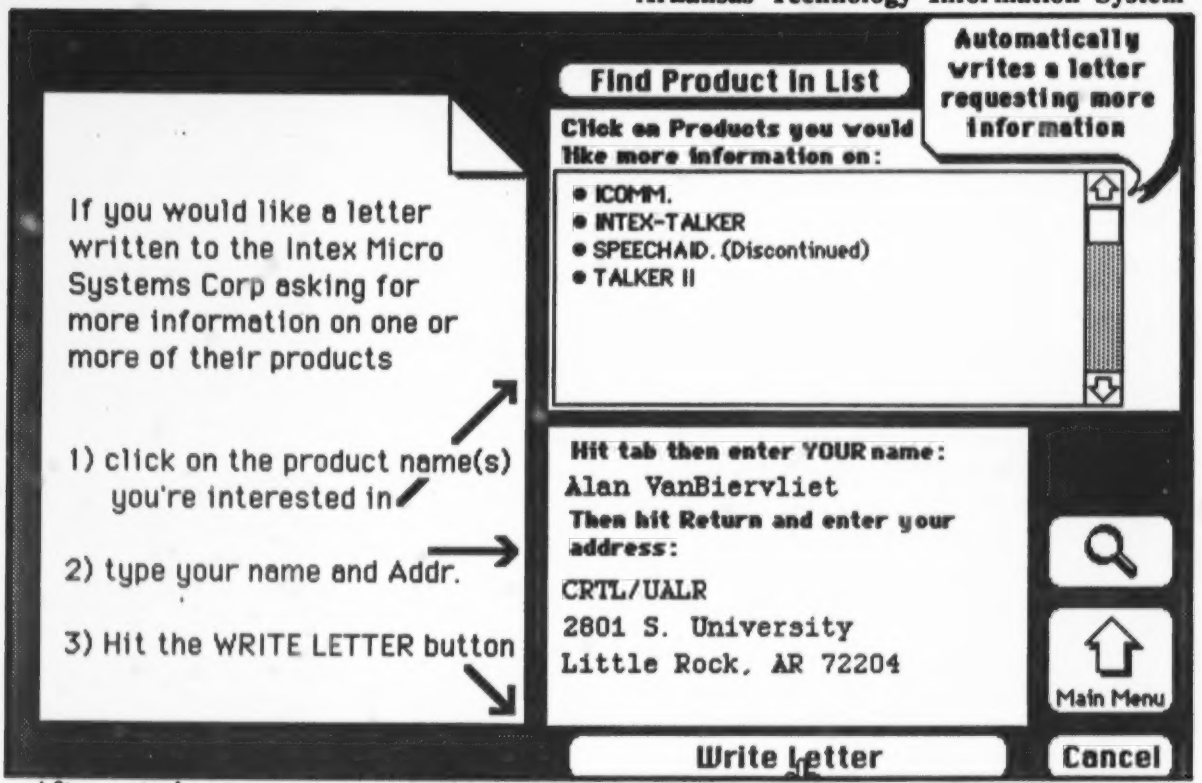

No: 014722
computer direct selection communicator (9 items)
Click to SHRINK print in all data fields back to normal
TALKER II
Generic name: DIRECT SELECTION
Talker II is a portable speech output communication aid with internal batteries and 80 character display. A HELP key accesses a built-in tutorial
Keywords: COMMUNICATION, NONVOCAL AND
Company:
>>MANUFACTURER: 1785
Intex Micro Systems Corp
PO Box 12310
Birmingham, MI 48012
$2,495.00, 1989
Picture
Print
Back To Outline
Main Menu
Back up on Tour
3 of 9
Show Next on Tour



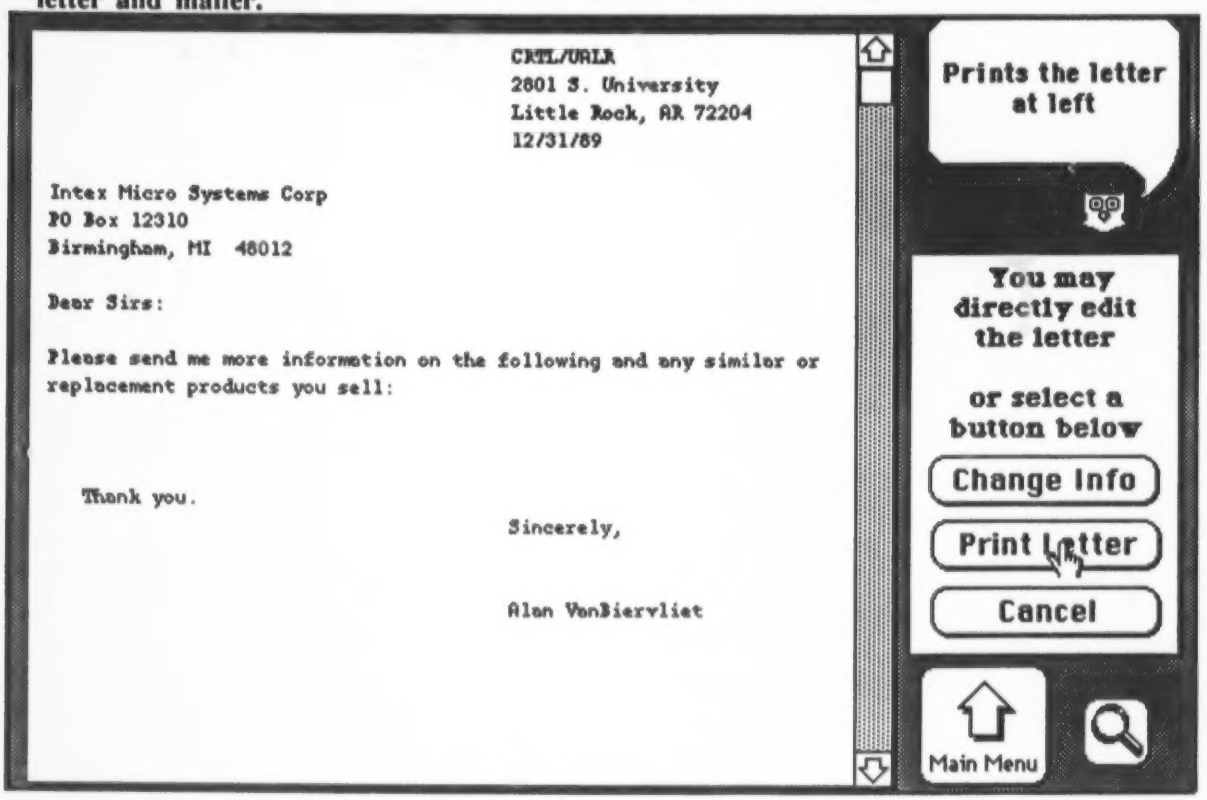
Cliking on the picture button takes you to an electronically stored picture of the device

Clicking on the mail/phone button takes you to the manufacturer's record or card



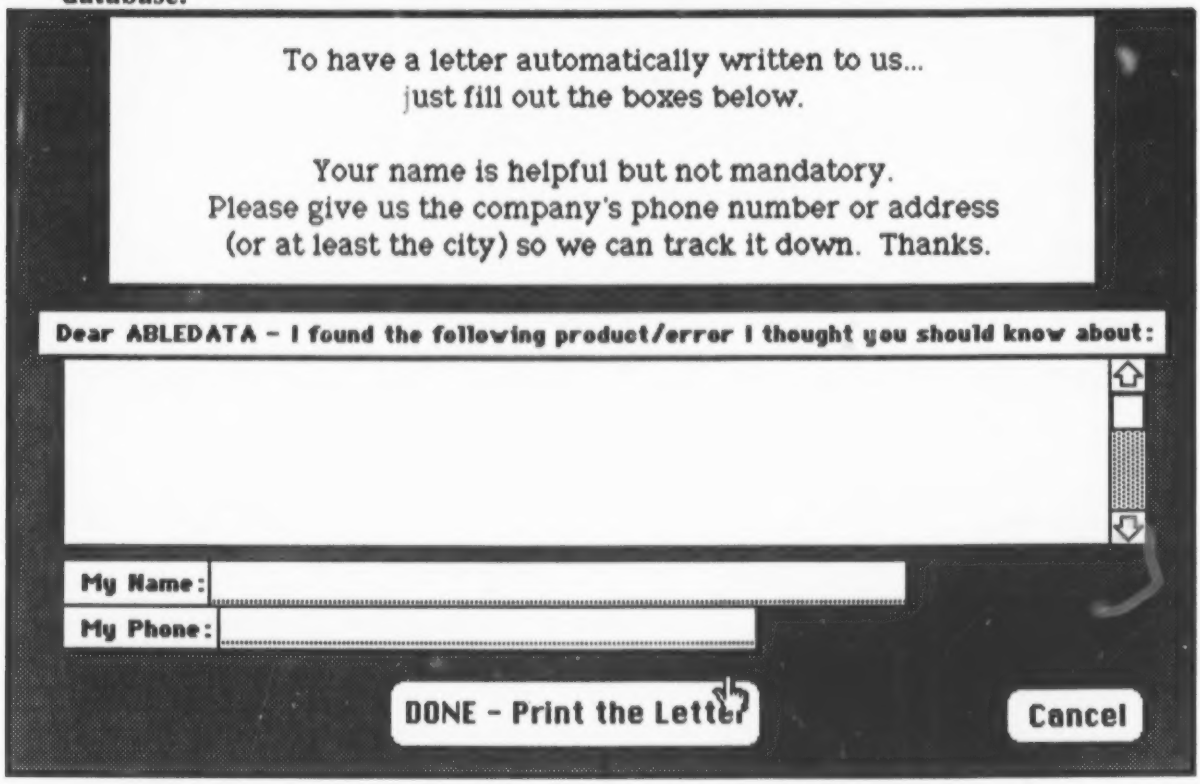

Automatically writes a letter requesting more information
Find Product in List
Click on Products you would like more information on:
• ICOMM.
• INTEX-TALKER
• SPEECHAID. (Discontinued)
• TALKER II
If you would like a letter written to the Intex Micro Systems Corp asking for more information on one or more of their products
1) click on the product name(s) you're interested in
2) type your name and Addr.
3) Hit the WRITE LETTER button
Hit tab then enter YOUR name:
Alan VanBiervliet
Then hit Return and enter your address:
CRTL/UALR
2801 S. University
Little Rock, AR 72204
Main Menu
Write Letter
Cancel

After entering your name and address, the program automatically produces a letter and mailer.



OOPS Feature
We try our best to cover everything and to have accurate descriptions, addresses etc.
We do however miss things. When we do you can help us (and other users like yourself) by using this feature to let us know about our omission, error or whatever.
Just click on the OOPS button below and the program will automatically get your information and write a letter to us.
Thanks
OOPS - You missed one
Cancel

Clicking on the Oops Button on the Main Menu Card enables users of Hyper-ABLEDATA to easily record and submit corrections and additions to the database.


To have a letter automatically written to us...
just fill out the boxes below.
Your name is helpful but not mandatory.
Please give us the company's phone number or address
(or at least the city) so we can track it down. Thanks.
Dear ABLEDATA - I found the following product/error I thought you should know about:
My Name:
My Phone:
DONE - Print the Letter
Cancel

-- FOLD MAILER AROUND LETTER AND SEAL ENDS --

First - fold back here

Alan VanBiervliet
CRTL/UALR
2801 S. University
Little Rock, AR 72204

Intex Micro Systems Corp
PO Box 12310
Birmingham, MI 48012

Second - fold back here

<-- (Tape mailer shut at sides) -->

CRTL/UALR
2801 S. University
Little Rock, AR 72204
12/31/89

Intex Micro Systems Corp
PO Box 12310
Birmingham, MI 48012

Dear Sirs:

Please send me more information on the following and any similar or replacement products you sell:

Thank you.

Sincerely,

Alan VanBiervliet

AV/Hyper-Abledata

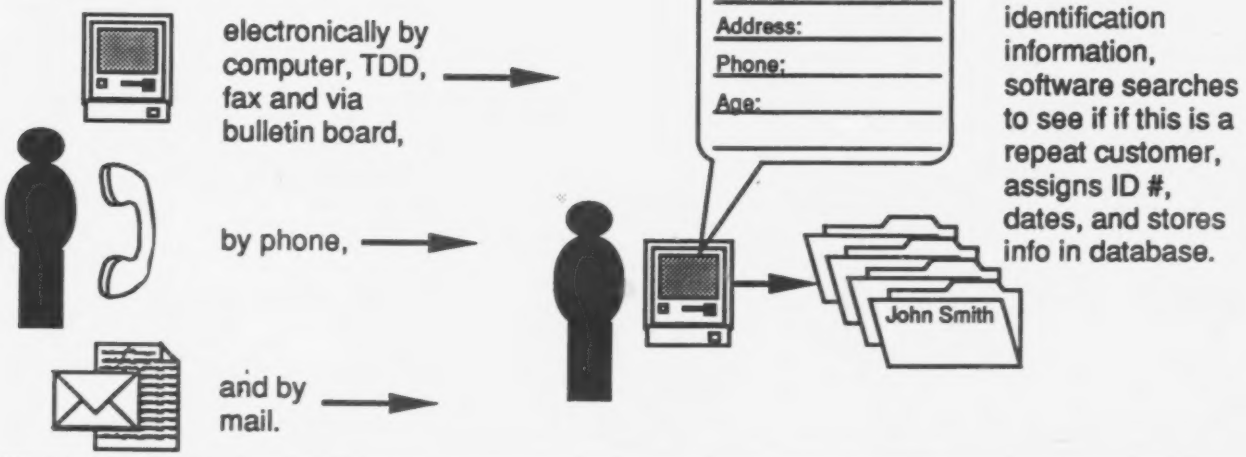
Appendix G

ARTIS Information System

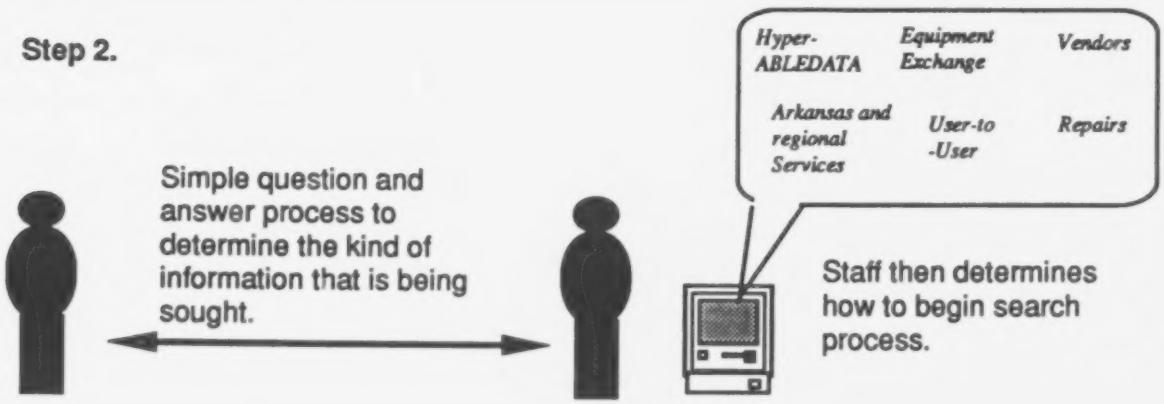
Tracing the steps of an inquiry to the proposed ARTIS system

Step 1.

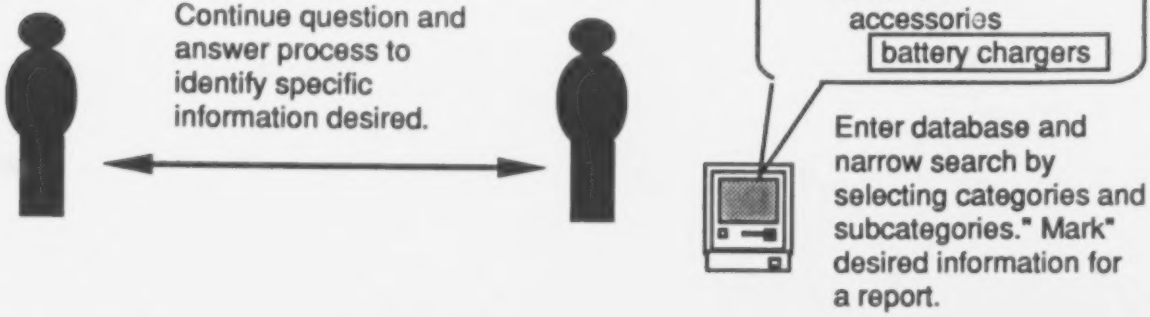
Inquiries can be made


electronically by computer, TDD, fax and via bulletin board,
by phone,
and by mail.
Name: John Smith
Address:
Phone:
Age:
John Smith
Staff enter identification information, software searches to see if if this is a repeat customer, assigns ID #, dates, and stores info in database.

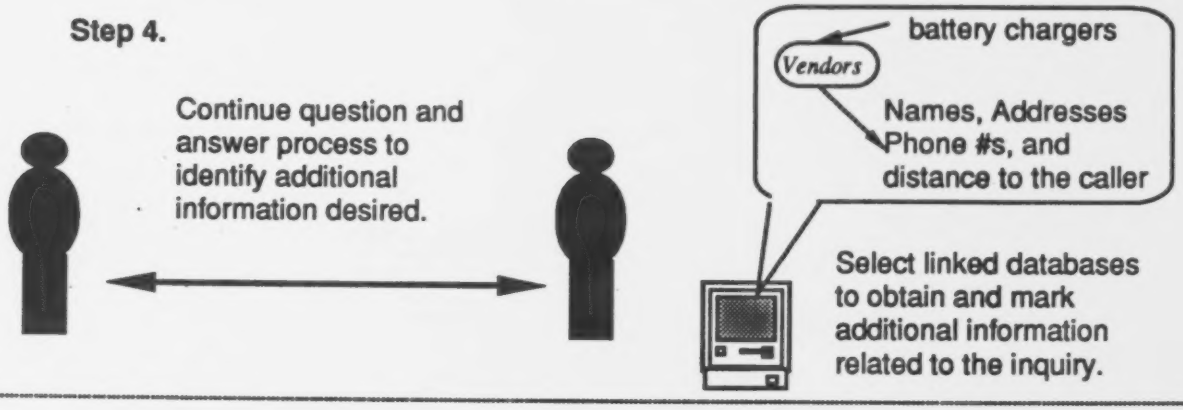
Step 2.


Simple question and answer process to determine the kind of information that is being sought.
Hyper-ABLEDATA
Equipment Exchange
Vendors
Arkansas and regional Services
User-to-User
Repairs
Staff then determines how to begin search process.

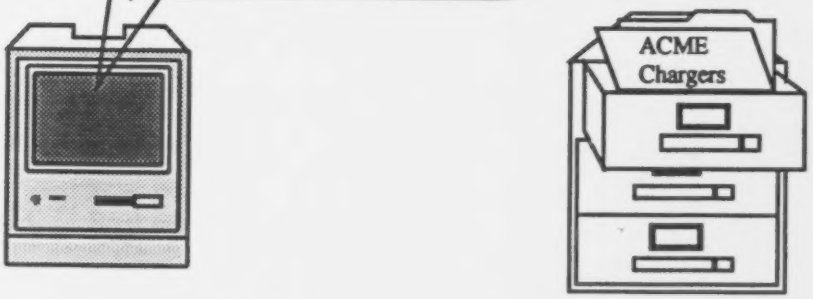
Step 3.


Continue question and answer process to identify specific information desired.
Mobility
Wheelchairs
Power driven
accessories
battery chargers
Enter database and narrow search by selecting categories and subcategories." Mark" desired information for a report.

Step 4.


Continue question and answer process to identify additional information desired.
battery chargers
Vendors
Names, Addresses Phone #s, and distance to the caller
Select linked databases to obtain and mark additional information related to the inquiry.

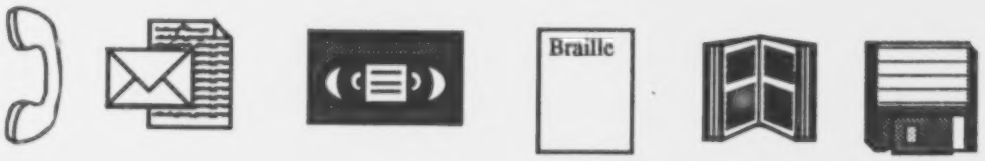
Step 5. The computer system will automatically assemble a report of all the "marked' information.



Additional print, audio, and visual materials will be gathered from the files.

Step 6.

As much information as possible will be given immediately (e.g., over the phone). A report will be sent to the caller in a format useful to the caller (e.g., text, large print, Braille, video, audio, and computer disc).



Step 7.

Followup each inquiry to obtain information about satisfaction with the information they received, the manner in which the process was conducted, and whether it helped them to secure the neccessary assistive device or service. The computer system will automatically generate individualized letters and mailers,

Appendix F

Serviced Delivery for Assistive Technology Services

Development of an Ultra User-Friendly, Personal Computer Based Service Deliver Directory for Assistive Technology Services

Background

One of the major barriers faced in the area of rehabilitation and assistive devices is in locating services or service programs with the right mix of expertise and in the right geographical location to meet the needs of individual clients. Traditionally, this information is gathered by a small number of individuals within a region, and kept in some type of personal filing system that they use for their own reference. There are not enough of these resource people, nor are they easily located when questions about services need to be answered.

Centralized resource programs have attempted to put together service delivery directories for their region. The difficulty here lies in their lack of familiarity with the programs and individual resources on a local level.

Finally, although computer-based service delivery and resource databases exist, they typically require a trained operator in order to be used effectively. The individual must not only be an effective clinician with knowledge of the consumers and their problems, but also familiar with computers, computer database systems, and, often, Boolean logic search strategies.

Proposed System

It is proposed to develop a computer-based service delivery directory system which:

a) is easy enough to use that it can be operated, with less than five minutes' introduction, by an individual who has never used a computer before (and with no instruction by someone who has used computers but not necessarily databases);

b) is distributable, so that complete copies of the database can be given to individual service delivery programs, advocacy personnel, support programs, independent living centers, and response and referral centers on a local level. This requires that it be low-cost and easy to operate, and be able to run on small and usually not state-of-the-art computer systems;

c) allows local service delivery providers and resource persons to add their own comments to existing records, as well as to add additional records to their copy of the database; and

d) provides a mechanism for automatically feeding those new entries, entered on a local basis, back to central, regional, and national collection points, to allow for the development of more comprehensive resource directories across the different areas or regions. (The upload would not include any entries or comments marked "private" by the local or regional database personnel.)

Such a system would allow a state or region to develop a comprehensive service delivery directory which would provide detailed information across a wide range of areas, and even more detailed information regarding local resources on a local level. The system would facilitate the collection of information and be "self-updating" through the monitoring of the area or regional programs. By having it computer-based, the database can also be easily duplicated and disseminated, so that it can be accessed and used by a wide variety of individuals and service delivery programs, significantly reducing the difficulty in locating programs with specializations

in certain areas.

One issue that arises in any service delivery directory is that of quality assurance: that is, how one controls the quality of service delivered by individuals listed in the director. The directory will be designed in such a way that individual programs or states can develop their own guidelines for what is or is not included in their directories.

Some Features of the Database

The database itself will be set up in a point-and-click format: that is, individuals can identify which services they want by simply using a mouse or a pen to point to items from a list on the screen. For individuals who have physical disabilities and cannot use pointing devices, a future version of the program will also be operable entirely from the keyboard. A feature which will allow access to the database by individuals who are totally blind will also be developed in the second year. On a Macintosh, this version would require no additional hardware, since it would use the speech output capabilities of the Macintosh. For an IBM system, some type of voice synthesizer would be required.

As can be seen from Figure 1, the database will try to take as much advantage as possible of people's existing familiarity with the world around them. Thus, the directory will be represented as a book. Accessing the alphabetized listing will be done with tabs as would be found on an address book.

Finding resources near any given location could be accomplished by pointing to the desired area on a map. Because some people have no idea where they are on a map, or are unable to read maps, the database will also be able to locate programs and clients from their ZIP code. In order to forestall service delivery personnel having to do multiple searches over ever-expanding geographical areas in order to find the nearest available program, the database will have a "From your doorstep" listing capability. In this option, the client's location is indicated either on a map or by ZIP code, and all of the service delivery programs which meet the specified requirements for this individual would be listed, in order by their distance from the individual's location.

A typical look-up sequence might be as follows:

1) The individual clicks on "Search by Services and Location."
2) The individual clicks on the particular type of service they are seeking.
3) The individual either clicks on a map or enters a ZIP code to indicate the desired center for the search.
4) A listing of all programs providing the indicated services is created. This listing can be ordered either alphabetically or by "distance from their door," at the searcher's option.
5) The database automatically creates a "chapter in the Service Delivery Directory and lists the programs one after another on successive "pages." The individual can then either print out a summary of these programs or page through the descriptions of the service delivery programs which meet their requirements.
6) Each full-page program description includes the name, address, contact person, and phone number of the program; the services provides; ages served; restrictions on

BEST COPY AVAILABLE

Figure 2
Presentation of Categories of Information

Edit Card
Table of Contents
Return to Listing
Print Info
ABBOT MEDICAL
Addr: Abbot Medical Inc.
1500 Highland Ave.
Terrance, CT
Zip: 06105
Contact: Mary Smolenski
Title: Director
Phone: 301/555-6966
Click on Topic Below For More Info
• Services Provided
• Areas of County Served
• Facilities
• Program Description
• Funding / Rates
•
• (Your Personal Notes)
Ages Served
0 3 5 12 21 60
Services Provided
SERVICES ROUTINELY PROVIDED
• Educational Assistive Technologies
• Vocational Assistive Technologies
• Environmental Access Technologies
SERVICES PROVIDED OCCASIONALLY
• Seating and Positioning
Click on items with "•" for more info
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Edit Card
Table of Contents
Return to Listing
Print Info
ABBOT MEDICAL
Addr: Abbot Medical Inc.
1500 Highland Ave.
Terrance, CT
Zip: 06105
Contact: Mary Smolenski
Title: Director
Phone: 301/555-6966
Click on Topic Below For More Info
• Services Provided
• Areas of County Served
• Facilities
• Program Description
• Funding / Rates
•
• (Your Personal Notes)
Ages Served
0 3 5 12 21 60
Facilities
Housed in the Wainright Center at the Marshfield Regional Hospital
Enter through the rear Carport Entrance to the building and follow signs.
The building is completely wheelchair accessible.
Click on items with "•" for more info
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Edit Card
Table of Contents
Return to Listing
Print Info
ABBOT MEDICAL
Addr: Abbot Medical Inc.
1500 Highland Ave.
Terrance, CT
Zip: 06105
Contact: Mary Smolenski
Title: Director
Phone: 301/555-6966
Click on Topic Below For More Info
• Services Provided
• Areas of County Served
• Facilities
• Program Description
• Funding / Rates
•
• (Your Personal Notes)
Ages Served
0 3 5 12 21 60
Funding / Rates
There is no charge for participation in the program.
The program is open to individuals who are not currently enrolled in school.
Click on items with "•" for more info
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

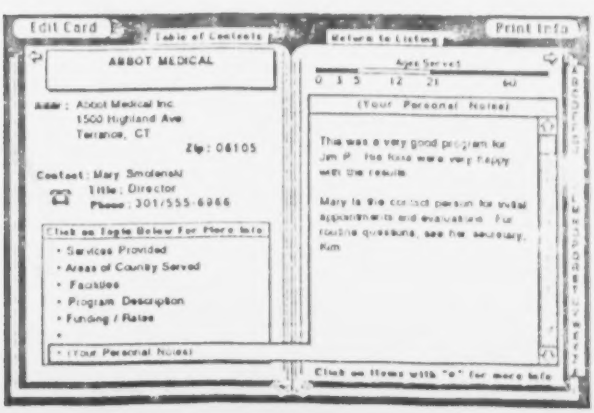
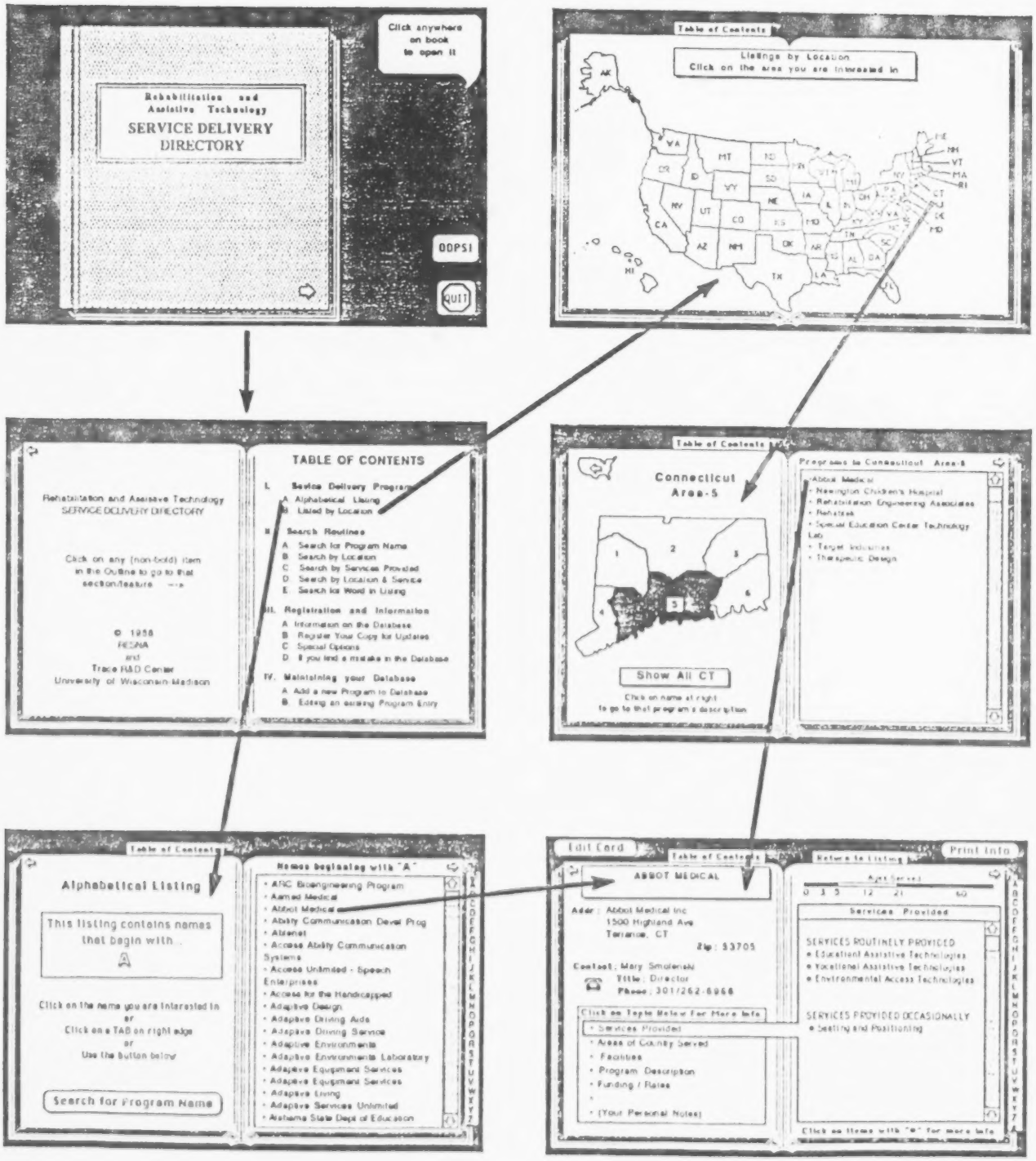

Edit Card
Table of Contents
Return to Listing
Print Info
ABBOT MEDICAL
Addr: Abbot Medical Inc.
1500 Highland Ave.
Terrance, CT
Zip: 06105
Contact: Mary Smolenski
Title: Director
Phone: 301/555-6966
Click on Topic Below For More Info
• Services Provided
• Areas of County Served
• Facilities
• Program Description
• Funding / Rates
•
• (Your Personal Notes)
Ages Served
0 3 5 12 21 60
(Your Personal Notes)
This was a very good program for Jim P. The kids were very happy with the results.
Mary is the contact person for initial appointments and evaluations. For routine questions, see her secretary, Kim.
Click on items with "•" for more info
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Figure 1
Accessing Information in the Service Delivery Directory



payment or eligibility; a brief description of the program; and other background information.

In order to provide a maximum amount of detail if the individual wants it, but not force them to dig through it if they are not interested, the database will use a hypertext approach to presenting the information. The entry card will list the different categories of information; clicking on a category will cause a window on the entry to open, displaying that information (see Figure 2). In this fashion, the individual can very easily move around, reading the particular information that they are interested in. As a result, the equivalent of several pages of information on each program can be contained in a simple one-page format, which facilitates both paging through the database and skipping between different types of information on an entry.

As a convenience, there is also an auto-dialing feature built into each entry. If the computer that the individual is using is connected to a phone modem, they can click on the telephone icon to automatically call the clinic or agency in question, allowing them to get additional details or to schedule an appointment.